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AHPCZ CHAIRPERSON'S FOREWORD

Miss Ratidzai Hofisi

AHPCZ Chairperson

It is my great pleasure to present the first issue of the Zimbabwe Journal of Health Sciences. This is a peer-reviewed journal whose scope is in the field of health reflecting the various professions that AHPCZ represents. The inaugural issue contains twelve articles from diverse sub-areas of health . This journal seeks to promote a culture of research and innovation amongst our practitioners which in turn will improve our health delivery system. The journal will also assist in information dissemination, which not only helps fellow practitioners, but also contribute positively towards raising awareness to the general populace.
I wish the readers a fulfilling reading and would like to take this opportunity to invite more articles for submission into the Zimbabwe Journal of Health Sciences.

I thank you

Miss R. Hofisi

A Dosimetric Comparison of Four 3DCRT Radiotherapy Treatment Techniques for Prostate Cancer: A Planning Study

Michelle Chishamiso Madzudzo

Parirenyatwa Group of Hospitals (Zimbabwe)

Abstract

This study sought to compare the dosimetric coverage of the planning target volume and dose delivered to the organs at risk in 3-, 4-, 5-, 6-field techniques of 3Dimensional Conformal Radiation Therapy (3DCRT) in patients with localised prostate cancer. The aim was to determine the most effective technique for sparing the rectum, bladder and femoral head while keeping adequate dose coverage of the planning target volume. In this study, 24 patients with prostate cancer already treated using 4-field technique underwent 3-, 5- and 6-field planning. Plans were generated on eclipse treatment planning system using AAA algorithm and at machine energy 6MV or 10MV. The PTV was defined as prostate gland with 10mm margins around clinical target volume. CTV is prostate gland except for the posterior margin (prostate gland anterior part where the rectum wall where 5mm margin is applied). For each patient OAR were outlined, rectum, bladder, right femoral head. ANOVA statistical methods were used to verify the significance of different between the treatment plans and all 4 plans differed slightly in measured parameters and none of them have statistically significant differences. In comparison to four-field technique, the five- and six-field technique resulted in improved dose conformity and heterogeneity. However, the difference was not very statistically significant. The three-field technique provides the best rectal sparing and none of the techniques has shown significant differences in bladder protection.

Keywords: 3dimensional conformal radiation therapy (3DCRT), dosimetric, prostate cancer, field technique

Background

Prostate cancer is one of the cancers killing men world-wide and is the most common cancer that affects men (Mofolo et al., 2015). According to Borok et al. (2012) and Katsadza (2016), prostate cancer is the most highly diagnosed malignancy in men in Zimbabwe. The incidence of prostate cancer in Zimbabwe has increased from 13.49% to 19.7% since 2012 and, as Chokunonga et al. (2017) report, the prevalence of prostate cancer increased from 8% in 1989 to 16% in 2017, and an average of 5 000 to 7 000 men are diagnosed each year. These statistics indicate that prostate cancer is a public health

concern in men in Zimbabwe. Currently, three radiation therapy facilities are available in Harare and Bulawayo to treat the malignancy.

The American National Cancer Institute (2016) recommends the following treatment options of prostate cancer: watchful waiting, surgery, chemotherapy, radiopharmaceuticals, hormone therapy and radiation therapy. Prostate cancer radiation therapy can be delivered either externally through (IMRT)and (3DCRT) or internally in the form of brachytherapy which can be used alone as or as an adjuvant to external radiotherapy in the boost form (Hanks, 2003).

In first world countries, IMRT is now the most used in prostate cancer radiotherapy. This highly specialised technique yields better results than does 3DCRT especially in sparing of organs at risk. However, this technique cannot be used universally due to unavailability of adequate equipment, organisation or patient status (Ashman, 2005). The Iran Journal of Radiology (2012, December 12) highlights that, in the developing world, the 3DCRT is an increasing command technique in the treatment of early prostate carcinoma in spite of its evident limitation when compared to highly modulated techniques such as IMRT and VMAT.

It is important to note that the optimal choice of beam configurations in 3DCRT remains unclear. The number of beams and their orientation vary from department to department since each technique has its own pros and cons. The simplest technique used in 3DCRT seems to be the three-field technique. Simmonds (2012) outlined that a three-field technique either with one anterior and two posterior oblique fields at 120 degrees to each other or one anterior and two wedged lateral fields which has a sharp rectal cut off in dose can be used. The four-field box technique with parallel opposed AP-PA fields and two lateral opposed fields achieves better dose distribution in terms of tumour coverage and a relatively reduced dose to the normal tissues. In other modern countries sophisticated techniques with 5- and 6-fields have become of standard use in the 3DCRT treatment of the prostate.

The four-field box technique with two laterals and AP-PA is the most used at Parirenyatwa Hospital. However, studies to determine which one provides the most coverage to the treatment volume whilst sparing the normal tissues have never been done locally. It is against this background that the present study was designed to

compare four 3DCRT radiation therapy treatment plan techniques and evaluate which of them is the best in clinical routine.

Objectives

To analyse and compare the dose volume relationships of the target volume and its organs at risk in three-, four-, five-, six-field techniques in 3DCRT external beam radiotherapy of the prostate.

Specific objectives

- To assess the homogeneity of dose distribution in PTV.
- To determine the most effective technique by computing the conformity index for each plan.
- To evaluate the mean target dose delivered to the PTV.
- To evaluate the mean target dose delivered to the organs at risk.

Method

In this research, 24 patients with prostate cancer already treated using 4-field technique underwent three-, five- and six-field planning. Plans were generated on eclipse treatment planning system using AAA algorithm and at machine energy 6 megavoltage or 10 megavoltage. The study subjects were derived from histological proven prostate cancer patients treated at Parirenyatwa radiotherapy department from January to December 2017. The department was using external beam radiotherapy of the prostate four-field technique. The researcher employed purposive sampling when selecting participants and a single proportion formula $n= z2\ p\ (100-P) / \varepsilon 2$ was used to calculate the sample size. The 24 prostate cancer patients were enrolled into this comparative planning study. All patients were already treated using the four-field box techniques with beam angles 0, 90, 180 and 270. The researcher constructed and optimised 96 plans for the various techniques with the beam angles orientation illustrated in Table 1.

Table 1: Beam angles orientation

Radiotherapy technique	Beam angles orientation in degrees
Three field	0, 120, 240
Five field	0, 90, 110, 250, 270
Six field	45, 90,135,225,270,315

The study used all the original CT scans of selected patients. For each patient, the organs at risk were contoured, namely the bladder, right femoral head and rectum. The plans were shaped at beams eye view to encompass the PTV shape using multi-leaf collimators. In addition, wedges were used to modify dose in treatment plan and to perform dose homogeneity in the PTV. The radiotherapy was planned using the eclipse planning system. Each treatment plan was generated using AAA algorithm and 6MV or 10 MV photon beams on a linear acceleration.

All plans were considered acceptable if they satisfied dose guidelines recommendations by the RTOG protocol. Plans were assessed first by visual inspection of dose distributions and then by analysis of DVH parameters to evaluate performance of each technique. ANOVA statistical analysis was used to compile the mean of the different measurements of plans. A p value of $< 0,05$ was considered to be significant in the various comparisons.

The following parameters were compared in the organs at risk and the target volume:

1) Target volume
    - ❖ Mean dose D 95%, D 99%, D1%
    - ❖ Conformity index
    - ❖ Homogeneity Index
2) Organs at risk
    - ❖ Mean dose

    - Rectum V50, V70
    - bladder and V50, V 70
    - femoral head V70

Based on recommendations of the ICRU report 83 and several clinical studies, special conformal indices were used to describe dose distribution in PTV. To assess the homogeneity of dose distribution in the PTV, a homogeneity index is to be defined as HI = Dmax / Dmean. The lower (closer to 0) the HI, the better is the dose homogeneity. Also, to facilitate the comparison of the various treatment plans, the RTOG conformity index (CI) was calculated: CI = PTV /TV where CI = 1 corresponds to ideal conformation. A CI > 1 indicates that the irradiated volume is greater than the target volume and includes healthy tissues. A CI < 1 indicates that the target volume is only partially irradiated.

All dosimetric parameters were appraised qualitatively and quantitatively using standard dose volume coverage, dose homogeneity and dose conformity. PTV coverage was evaluated with D min, D mean and max dose to PTV. ANOVA statistical analysis was used to compile the mean of the different measurements of plans. A p value of $< 0,05$ was considered to be significant in the various comparisons. Normal tissue avoidance of OAR (bladder, femur, rectum) was evaluated with V50, V70 for rectum, V50, V70 for bladder, V50 for femur.

The research was performed according to the Declaration of Helsinki principles. The World Medical Association (WMA) developed the Declaration of Helsinki in 1964 as a statement of ethical principles for medical research involving human subjects, including research on identifiable human material and data. To fulfil the demands of the Helsinki principles, the researcher sought approval from radiotherapy department Chief Physicist and Clinical Director Parirenyatwa Hospital to use the TPS in the department before the actual project began. In this particular research confidentiality of patient information for anonymity was ensured.

Results

In a clinical setting, the PTV coverage is a major optimisation objective. The goal of radiotherapy is to give maximum dose to the tumour whilst sparing the surrounding normal tissue. In this clinical research, the following results were found.

Target volume coverage

In prostate radiotherapy, the goal is to give 100% of dose to 95% of the PTV. Plans were acceptable if they achieve this objective. No plan was acknowledged with a hot spot along the rectal or bladder walls as these areas receive substantial dose**.** All dose constraints according to PTV coverage were similarly achieved by all plans.

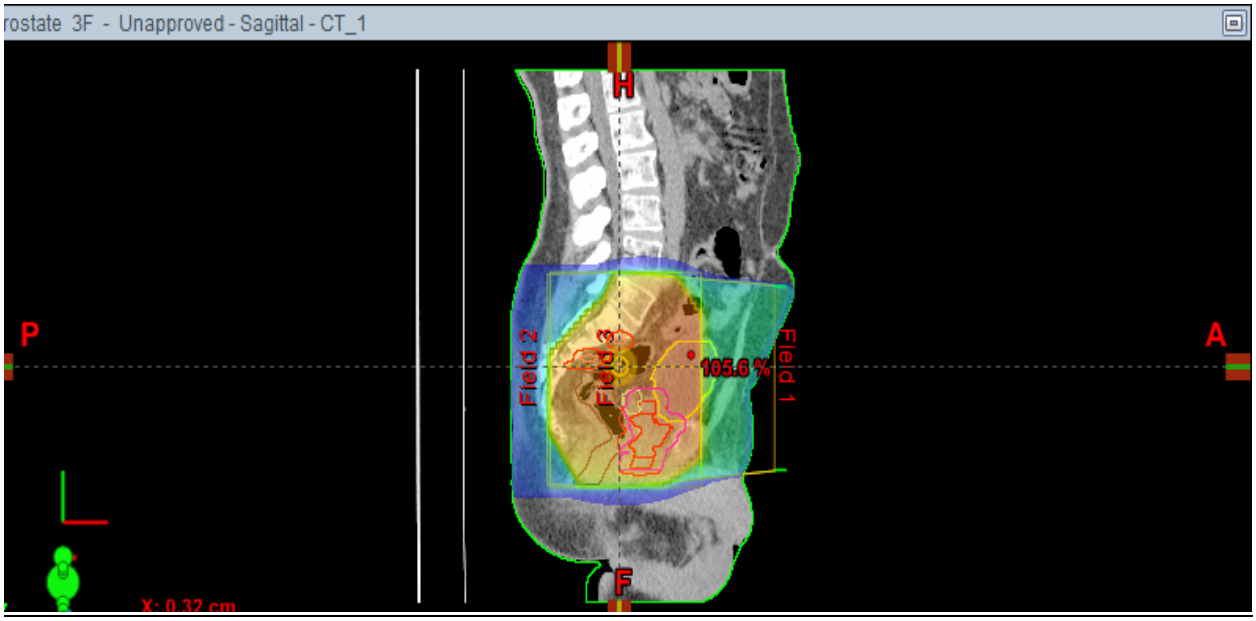

Figure 1: Dose distributions along sagittal planes

The 6-field technique followed by 5-field technique showed efficient and noteworthy improvement in terms of target coverage and homogeneity compared to other techniques. With less hot spot and high dose conformity in the target volume confirms a better 3D dose distribution in the PTV using 6-field technique.

The maximum, mean and minimum doses were calculated and analysed for each patient. The PTV received not more than 107 % of the prescribed dose. The PTV was assessed using the minimum, maximum and mean doses. Values were recorded in a table in appendix section. Maximum doses for 3-field, 4-field, 5-field, 6-field were 105,3 +-/- 1.7, 105,8 +/- 0, 106,2 +/- 0,7 and 106,8 +/- 0,4 respectively and is not statistically significant.

Comparison of dosimetric parameters

Table 2: Mean values of conformity and homogeneity indices

	3F	4F	5F	6F	P value
CI	0,96+-0.03	0,96+-0,05	0,97+-0,03	0,98+-0,01	0,041
HI	1,20+-0,04	1,16+-0,02	1,10+-0,02	1,02+-0,03	0,025

Conformity index

In this study, CI exposed comparable results within the techniques p value =0,041. The 3-field technique showed inferior confirmation with a value of 0,96+- 0,03. The 6-field technique achieved a high value of CI 0,98 +- 0,01 compared to the other techniques.

The 6-field technique gives considerable improvement of dose conformity to PTV with higher value of CI than other fields almost near to the ideal CI which is 1.

Homogeneity index

The HI values were all greater than 1. The 6-field technique had the best homogeneity compared to all the other plans as the number of beams were reduced from 6 to 3. The HI value increased and; hence, the 3-field technique is the least homogenous.

Normal tissue sparing

We analysed the volume dose parameters of the rectum and bladder. The 3 F plan achieved a superior sparing of the rectum but statistically insignificant (p values 0,3 0,2 0,4).

Table 3: Comparison of mean values for all evaluated plans

Parameter	**3F**	**4F**	**5F**	**6F**	**Statistical significance**
Rectum V50	25+/-3%	24 +/-1%	22+/-3%	21+/-2%	No
V70	16+/-2%	13+/-2%	12+/-1%	11+/-2%	No
Bladder V 50	28+/-1%	30+/-3%	29+/-2%	27+/-3%	No
V70	17+/-2%	17+/-1%	18+/-3%	19+/-1%	No
Femur V50	14+/-1%	13+-2%	16+/-3%	15+/-2%	No

Normal tissue sparing

The researcher analysed the volume dose parameters of the rectum and bladder. The 3 F plan achieved a superior sparing of the rectum but statistically insignificant (p values 0,3 0,2 0,4).

Discussion

Implementation of 3DCRT gives opportunity to improve results of localised prostate cancer treatment. An important goal of 3DCRT is to enhance the local control by

increasing radiation dose to target volume without significant increase of treatment toxicity or even, in some cases, its reduction.

The present work aimed to assess the potential benefits and limitations of four 3DCRT techniques in treatment of prostate cancer. The four techniques for prostate cancer treatment included in this comparison make use of photon beams only. They also have a relatively easy handling advantage with respect to more sophisticated techniques used in the developed world such as IMRT and VMAT.

PTV coverage

All dose constraints were achieved regarding PTV coverage. When inhomogeneity is present, it is important to discriminate between underdosing and overdosing. If under dosing is observed, known magnitude, location and volume of low dose region is required. A modest number of cold spots with low moderate dose may not reduce tumour response or tumour control probability. The sagittal, transverse and longitudinal view of the plans assisted in determining location of hot spots or cold spots. The regions receiving lower doses were very small and were predominantly located on the anterior portion of the external iliac nodal region, an area with a low probability of tumour involvement. Hot spots within the PTV were checked to make sure the location out of some normal structures (i.e., sacral plexus) that are associated with toxicity (Niemierlo, 2000).

Comparison of dosimetric parameters

Homogeneity and conformity indices are important tools to use when evaluating the quality of a plan. This research showed that the 6-field plan had the most conformity and achieved homogeneity better than the 3- and 4-field plans. The 5-field plan had inferior quality to the 6-field technique but the difference was insignificant.

The 5-field can also achieve better conformity and homogeneity. Vaedezzah (2012) made the general observation that the conformity index and homogeneity index would be better in plans with more beams than those with few.

Michael (2014) found that a target volume HI ≤ 1.04 to be associated with more favorable rectal doses at clinically relevant dose-levels without compromising dose to the PTV. There was no statistically significant correlation between decreasing HI and bladder dose. It's advisable to carry out dosimetric studies investigating a possible correlation of HI with dose to OAR in prostate cancer. The bladder and rectum are

dose limiting structures and this analysis is very important in prostate cancer treatment planning. The conformity index is used to evaluate the clinical authentication of better treatment. Improved CI may be helpful in delivering high doses to PTV without delivering more dose to normal surrounding tissues (Paddick, 2006). In this study, 5-field and 6-field have better conformity and these results are consistent with (Vaezzedah et al., 2012) findings.

Luxton (2004) postulates that it is always desirable in conformal radiotherapy treatment to shape the prescribed isodose volume perfectly around the PTV to achieve the CI of 1,0 but because of irregular shapes of PTV, close proximity of critical organs and inadequacy of field shaping such as MLC leaf width and MLC transmission make it difficult to be achieved practically.

Normal tissue sparing

a) Rectum

It is generally agreed that the most dose limiting OAR in prostate radiotherapy is the rectum. Rectal side effects mainly limit the dose escalation in radiotherapy of prostate cancer therefore each plan should be precisely evaluated according to dose received. However, there is insufficient data to allow estimation of tolerance dose.

In this particular study the results from our analysis indicate that the 3-field technique spared the rectum more than others. The data also indicates that the technique that has the worst sparing of rectum was the 4-field technique. According to (Dobbs, 2005), a four-field technique with wedged lateral beams may spare more normal rectum, and four or six coplanar beam arrangements may reduce doses to the OAR further. According to Marsh et al, 2005), when using the four-field technique, it was found out that this technique when using lateral and anterior inferior oblique often improves rectal DVH compared with axial plans that were used for the four-field technique in this particular study. On the other hand, Khoo et al. (2008) indicate that the 3-field plans angles 0, 90, 270 would allow to archive the greatest rectal sparing. In agreement, Micheal (2014) states that the 3 field spares the rectum more. In contrast, Neal et al. concluded that the 4-box technique provided the best rectal sparing compared to the 3-field technique. The reason for this discrepancy could be due to the fact that the 3-field technique evaluated by Neil et al. 20 applied beam angles of (04, 110, 250) which are inferior to 3field technique with angles (0,120,240) and 0,90 ,270.

In another study, Emami (2001) found out that the 3-field technique offered more sparing effect than 4-field technique, however it is important to note that at higher energies at 20mv the effect is greater, with 6mv the sparing effect is there but minor. It is worth considering choosing the right energy when doing treatment plans.

Ashman et al. (2005) found out that the 5-field and 6-field techniques which use posterior obloquies deliver low mean dose to the rectum.

It is worth mentioning that quite a number of rectal toxicity studies have been done to compare 3DCRT, VMAT, IMRT in prostate radiotherapy. Zelefsky, (2002) reported that VMAT results in slightly better rectal sparing whereas. Luxton et al. (2004) found that VMAT and IMRT provide similar DVH and spare the rectum more than 3DCRT. In conclusion, its worth considering advanced techniques in prostate cancer treatment in the near future.

b) Bladder

Generally, none of the analysed techniques indicated the advantages and disadvantages in a sparing effect of the bladder although these techniques were comparable. Results from a study done in Iran on the dosimetric differences of various treatment plans on prostate cancer three-field, four-field, five-field, six-field treatment techniques indicated that four-field and six-field with anterior oblique beams deliver low mean dose to bladder (Vaedezzah, 2012.) This implies that the two sets of oblique fields put the organ out of the radiation fields.

Bladder avoidance is of importance and it is required for each radiotherapy department to adopt an effective bladder filling protocol when treating prostate cancer patients. Currently available technologies for conformal delivery of radiation to the target and specifically for conformal avoidance may make the advantages of full-bladder treatment less pronounced. In addition, data about the reproducibility of patient perception of a full bladder are lacking. However, it is acknowledged that, through the course of radiation therapy, bladder filling may vary in a systematic manner (Vitalli, 2006).

Not uncommonly, either because of advanced age or irritating urinary symptoms, prostate cancer patients find it difficult to maintain a full bladder during radiotherapy. Filling of the bladder may also significantly affect prostate position and have a negative impact on the accuracy of radiotherapy (Melian, 2007).

Empty-bladder treatment has therefore been advocated in patients who require radiation therapy to the prostate alone. This approach provides better patient comfort and potentially better reproducibility. Empty-bladder protocols for radiation therapy of the prostate are coming into use, and the reported bladder toxicity is low so far.

c) Femoral heads

For evaluation purposes, one bone was used. Vaedezzah (2012) carried out a study comparing a 3- and 4-field and concluded that the 3-field technique spares the femoral head more than the 4-field technique. Three-field plans with no lateral beams resulted in low dose to femoral heads. The results of this particular study affirm this and further indicated that the 3-field is more sparing and proved to be better than all the other plans. However, data from literature have indicated that more sophisticated techniques using 6- or more fields lead to improved femoral bone protection but, on the other hand, the applied dose is not a limiting factor for escalating dose in prostate radiotherapy (Paddick, 2015). In agreement, Bedford found out that the 6-field technique had slightly better results in sparing the femur than 4-field. Ashman (2005) found that the 3-field and 6-field techniques with no lateral beams resulted in low dose to the femur. Use of dosimetric parameters in evaluating femur risk is important however use of radiological models to analyse plans is also important. NTCP calculation to estimate risk is a useful evaluation tool for the plans and analyse if the organs at risk are really safe from the harmful effects of radiation to normal tissue.

Conclusions

All evaluated plans according to dose distribution in target PTV have not indicated any significant differences. The dosimetric comparison of 4 3DCRT techniques in the treatment of prostate cancer showed that all techniques give good coverage of PTV as shown by D95 of the prescription dose as well as excellent dose homogeneity and conformity. However, the 5- and 6-field attained the best conformity and homogeneity. None of the techniques showed any significant advantage in sparing the bladder. The 3-field technique gave the best sparing of the femoral heads. Given these results from this study, it is advisable to use more fields in 3DCRT to achieve better dose coverage whilst minimising dose to the surrounding organs at risk.

The four-field technique is the standard treatment at the centre in this study. However, in comparison with 3-, 5- and 6-fields its worth considering using the and 6-field techniques more for improved local control.

Recommendations

- Comparing both dosimetric and radiobiological parameters can be very useful in evaluation and analysing plans when determining the best plan for clinical use.
- When using 3DCRT, employing more fields improves target homogeneity and conformity therefore use of 5-, 6-fields is worth considering.
- Implementation of advanced technology such as VMAT and IMRT is crucial as these have better treatment outcome.

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A Commentary on the Importance of Promoting Health During a COVID-19 Outbreak, and Lessons Learnt on the Implementation of Low-Cost High-Impact Interventions: Budiriro Hand Washing Program Case Study

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Abstract

This research article examined the importance of promoting health by focusing on an innovative approach and intervention implemented at community level to prevent the spread of COVID-19 pandemic at a minimal cost whilst adhering to the stipulated best practices. This case study is a review of a low-cost high-impact intervention conducted in Budiriro, Harare, Zimbabwe. It is also a review of an online survey which was conducted to obtain information on whether there is a gap between people's health intentions and their current lifestyle. The survey gave evidence that there was a gap between 'intentions' and 'actual participation' in health promoting behaviours, showing that there is a need to conduct interventions to close such gaps. It was observed that, while people intend to prevent COVID-19, very few people were participating in health promoting behaviours such as washing hands frequently and properly. In conclusion, a multisectoral approach should be adopted in which both public and private stakeholders come together to promote health during the COVID-19 pandemic. This would be through conducting health interventions such as hand washing programs at a larger scale. A united approach could win the fight against COVID-19.

Keywords: Health promotion, intervention, health education, physical distancing, COVID-19, pandemic

Introduction

As the COVID-19 pandemic continues to plague the world, it is of great importance for everyone to promote health. This can be achieved by cooperating and working in unison whilst applying evidence-based health practices and conducting innovative health promotion activities. A holistic approach is definitely required in order for any country to overcome this pandemic.

In order to tackle and overcome the COVID-19 pandemic, Zimbabwean citizens should have increased control over their health, and they should also be equipped with skills to improve their health as well. It is important to note that the individual

choices and actions of people have a bearing, not only on their own health, but also on the health and well-being of fellow citizens in the country.

Health promotion covers a wide range of social and environmental interventions that are designed to benefit and protect individual people's health and quality of life by addressing and preventing the root causes of ill health, not just focusing on treatment and cure (World Health Organisation Western Pacific Region, 2021). It also enables people to increase control over their own health.

In Zimbabwe everyone has a part to play in promoting health during the COVID-19 pandemic. During the current COVID-19 pandemic, health education is particularly important in effecting behaviour change so that people wash their hands properly and sanitise, wear face masks correctly covering the mouth and nose, as well as maintain physical distancing. Adhering to the above measures could prevent the further spread of the coronavirus and help keep the prevalence of COVID-19 low (Chiu et al., 2020).

Background

A person's lifestyle plays an important role in determining one's chances of getting COVID-19. Paying particular attention to such things as washing hands properly, sanitising, maintaining social distance, and proper wearing of faces masks would go a long way in ensuring our physical health. The need to eat a healthy balanced diet, to exercise, and to have sufficient rest can never be over emphasised as a means of obtaining optimum health, as these tremendously help in boosting the immune system (Finley & Landless, 2014). Harmful habits such as alcohol consumption should also be reduced and, if possible, stopped so as to have a better stand against COVID-19 by having a good immune system (Sarkar, Dipak et al., 2015). Stopping smoking could also help to improve the immune responsiveness against diseases (Qui, Feifei et al., 2017).

Michie et al. (2020) explain the importance of understanding health behaviour in order to slow down COVID-19. They offer a five-point plan: creating a mental model; creating social norms; creating the right level and type of emotion; replacing one behaviour with another; and making the behaviour easy (Michie et al., 2020).

Strategic planning should be ensured in each step of the way when promoting health during the COVID-19 period. The physical, mental, and social spheres of life should

be looked into and ways sought to promote wellbeing in these spheres even during the COVID-19 pandemic.

Low-Cost High Impact Interventions to curb the spread of COVID-19 in Budiriro, Harare

Health interventions should be conducted even at community level for the purpose of preventing the spread of COVID-19. In line with the theme "COVID-19 Best Practices and Innovative Approaches in Under Resourced Contexts", a low-cost high-impact intervention was conducted to curb the spread of COVID-19 in Budiriro 5B Cabs Houses, Harare. A video showing this intervention can be viewed on YouTube (Gota, 2020).

The aim of the hand washing program intervention was to conscientise the community members on the importance of washing hands "properly" to prevent the spread of COVID-19. Practical demonstrations on how to wash hands properly were shown to the community members in Budiriro. Community members also participated in the hand washing programme by washing their hands using the proper hand washing technique. Engaging the community members is of paramount importance as it gives them a sense of ownership of the programs being implemented in the community.

This was a low-cost intervention and it required minimal resources to conduct the program. Basically, soap, water and volunteer personnel were the prerequisites for conducting a hand washing program.

Research shows that "properly" washing hands prevents the spread of infectious diseases (Warren-Gash, Charlotte et al., 2013). In fact, research has shown that washing hands with soap and water under running water can reduce respiratory infections by 16% (Rabie & Curtis, 2006).

The following steps are followed when washing hands using the proper hand washing technique:

1) Wetting hands with safe running water and applying enough soap to cover the wet hands.
2) Scrubbing all surfaces of hands, including backs of hands, between fingers and under the nails for at least 20 seconds.

3) Rinsing thoroughly with running water.
4) Drying with a clean dry cloth or disposable paper towel.

Methodology

Intervention design

The location of Budiriro in Harare was chosen as the area for conducting the hand washing program intervention as it is amongst the high-density areas where there is a shortage of municipal running water. It was thus seen as important to strengthen community action and develop personal skills that would enable people to practice good hygiene practices such as washing hands properly in that locality, and ultimately reduce the spread of COVID-19.

Population

Budiriro residential area has a total catchment population of 121 236 people (Zimbabwe National Statistics Agency), and the intervention was conducted in Budiriro 5B CABS Houses which has a total of 3000 households.

Target sample size for intervention

The intervention was designed to cater for about 100 people in the community without segregating age, gender or race. The facilitators went to the shopping centre in the Budiriro CABS community and conducted the hand washing demonstrations in which community members joined in and freely participated. The facilitators also moved through the community residential lanes and involved the residents they met in practical demonstrations of washing hands. A register of participants was compiled in which those who participated were recorded, and the age group of the 100 participants was noted to be between 9years to 36 years.

Health promoting behaviour gap analysis survey in relation to handwashing and other health promoting behaviours

I also conducted a cross-sectional online survey to ascertain if there was a gap between people's intentions and actual participation in health promoting behaviour including hand washing.

Data gathering instrument

A questionnaire link with two sets of questions was sent to 80 participants in Zimbabwe using Survey Monkey (an online survey software). The survey

questionnaire was sent to the 80 participants via email and social media platforms such as Facebook and WhatsApp. The composition of participants my contact list aged between 25 to 35 years. Of the 80 participants 45 were males and 35 were females.

Questionnaire design

The first set of questions in the questionnaire included the following:

- Do you want to prevent the spread of COVID-19?
- Do you want to promote good health?

The second set of questions included the following:

- Are you sanitising and washing your hands frequently?
- Are you wearing your mask properly?
- Are you practising social distancing?

Findings from the survey

After the survey, it was noted that all the responses in the first set of questions were in the affirmative, whilst for the second set of questions 48 people (60%) responded affirmatively. Although the above survey was only preliminary, it shows that there is a serious gap between 'intentions' and 'actual participation' in health promoting behaviours. The survey sets a base for future surveys which can explore more on the aforementioned gap. Future surveys can explore more and be more representative, and thus enable the formulation of comprehensive health promotion and education interventions and strategies to bridge the gap between the grand idles we long for and our current way of life (lifestyle).

Conclusion

Mileage has been gained significantly in educating people about the COVID-19 pandemic, but more can still be done to promote good health during the pandemic. More interventions need to be conducted to sufficiently promote health during this current global crisis. A multisectoral approach needs to be adopted whereby both public and private stakeholders come together to promote healthy lifestyles, as well as to put in place environmental structures that encourage behavioural change favourable to the promotion of good health. It is also important to note that simply encouraging people to stop the 'bad' behaviour is not enough. The undesirable behaviour has to be replaced with the preferred or 'good' behaviour. In our case with

COVID-19, this would imply advising people to wash their hands properly with soap and running water, rather than simply telling them not to shake hands.

The mandate of promoting health during the COVID-19 period should not be left to single entity such as the Ministry of Health and Child Care, but it should be a cooperative mandate as well as an individual responsibility. Everyone has a part to play in the fight against COVID-19, and people should come together to mediate, advocate and strive to enable all to achieve good health even in the midst of the COVID-19 pandemic. Together we can promote health during the COVID-19 pandemic.

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Sexual and Reproductive Health (SRH) Challenges Faced by College Students During the COVID-19 Lockdown: A Case of Mutare Teachers' College

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Abstract

Sexual and reproductive health (SRH) for college students may not be prioritised during COVID–19 pandemic and such a scenario may lead to more deaths than those caused by the virus itself. The study examined SRH challenges faced by college students during the COVID-19 lockdown. The study used the phenomenological research design and employed thematic approach to analyse the qualitative data. Purposive sampling was used to select 12 peer educators, 8 females and 4 males in their first year. Interviews and FGDs were used to collect data. The study established that college students faced many SRH challenges such as access to SRH services and information during the COVID-19 lockdown. The study recommends that student SRH issues should be incorporated into COVID-19 intervention strategies. The current study used expert purposive sampling technique to select students.

Keywords: Sexual, reproductive, health, sexual and reproductive health, college, students, sexual and reproductive health

Introduction

One major aspect of students' lives that is being disturbed by COVID-19 is their access to health services (UNFPA, 2020). As a new disease, COVID-19 pandemic brought with it new challenges such as lockdowns. During lockdown, movement was limited as a result students failed to get services such as SRH services (Phillip et al., 2020). This scenario left students devastated.

COVID-19 originated in China in 2019 and due to globalisation quickly spread all over the world. Indirect effects of COVID-19 on services and the SRH of students was found to be high. There has been an increasing concern about SRH among college students who are among the productive population of any country. In every country, millions of young people in general and adolescents and youths in higher education institutions (HEIs) in particular are at high risk of sexually transmitted infections (STIs) and other SRH problems.

According to Murewanhema et al. (2020), school closures mean increased time spent in the community, exposing youths to sexual activities, sexual exploitation and sexual

and gender-based violence (SGBV). Due to COVID-19 lockdown, some people were asked to self-isolate and others to mandatory quarantine. There was closure of international and internal travel; bans on social gatherings; closure of bars and restaurants; schools and colleges shut; suspension of religious gatherings; financial loan packages for businesses; financial support for individuals; reduction in transport and retail services and the suspension of non-essential businesses from building companies to leisure centres (Goulds, Fergus & Winslow, 2020). With reduced access to SRH services for students, which include HIV and STIs, post-exposure prophylaxis, family planning pills, emergency contraception and even condoms, cases of STIs and HIV infections and unintended pregnancies increased (Sully et al., 2019). Unintended pregnancies tend to increase the risk of unsafe abortions, with consequent rise in septic miscarriages, haemorrhage and maternal morbidity and mortality (Murewanhema, 2020). Closure of family planning clinics also increased costs and reduced availability stemming from supply chain disruptions owing to reduced production and delayed movements of contraceptives (UNFPA, 2020).

UNFPA (2020) noted that, during the COVID-19 lockdown, there was an increase in cases of sexual gender-based violence. Murewanhema (2020) argues that the COVID-19 pandemic indirectly exposes females to risks of unintended pregnancies, sexually transmitted infections including HIV and human papilloma virus (HPV). Due to COVID-19 lockdown and travel restrictions, access to SRH services and utilisation of SRH services by students was reduced (Murewanhema, 2020). On the other hand, the same author maintains that college closures meant increased time spent in the community, exposing students to sexual activities including watching sexually explicit videos, sexual exploitation and sexual and gender-based violence.

The COVID-19 pandemic may result in more students dropping out of college because of lack of funds since most parents or spouses lost their sources of income during lockdown. As a result students may engage in risky activities such as vending during the night and illegal cross-border trading leading to multiple concurrent partners which expose students to sexual exploitation, sexual gender-based violence (SGBV) and multiple concurrent partnerships, all risk factors for HIV, HPV and other sexually transmitted infections (STIs) and unintended pregnancies (Rodrigo & Rajapakse, 2010).

A study by Mambo et al. (2020) established that, due to lockdown, there was no access to information and services of sexual and reproductive health rights (SRHR) among young people. Access to sexual and reproductive health services and care were curtailed and this negatively affected young people's lives directly and indirectly. Due to COVID-19, access to SRH services and access to condoms and lubricants decreased due to supply chain disruptions and development partners' changing focus and resource allocations towards containing the COVID-19 pandemic (Global HIV Prevention Working Group, 2020).

College closure and movement restrictions are potential barriers of access to critical health promotion messages among students (Murewanhema, 2020). When colleges were closed, students engaged into high-risk informal employment, which exposed them to sexual exploitation. In case of abuse, Murewanhema (2020) points out that students failed to find appropriate interventions timeously and some had nowhere to report these abusive societal tendencies. Due to challenges created, some students could fail to cope with pressure of life, post-traumatic disorders, stress and depression. Some students would therefore resort to prostitution, drug and substance abuse. A study by Mambo et al. (2020) adds that youths faced challenges of STIs, unwanted pregnancies and sexual abuse during COVID–19 lockdown. The view is echoed by Cousins (2020) and WHO (2020) who report that, due to staying at home for long time, there has been an increase in domestic violence, sexual gender-based violence and pregnancies.

Studies by Mambo et al. (2020) and Jatmiko, Syukron and Mekarsari (2020) established that there was an increase in domestic violence cases including sexual harassment since the COVID-19 outbreak. During crisis such as COVID-19, it has been noted that that sexual violence increases, lack of family planning supplies and services leads to the spread of sexually transmitted infections (STIs) and unintended pregnancies (Nickerson, Hatcher-Roberts, Adams, Attaran & Tugwell, 2015). The same authors found out that, due to the COVID-19 pandemic in Uganda, access to sexual and reproductive health services, including family planning, emergency obstetric and antenatal care, and gender-based violence prevention and management services were essential to save youths.

In Uganda, two major surveys conducted among university students indicated that young people had limited access to sexual and reproductive health services and

HIV/AIDS-related programmes despite their engagement in high-risk sexual behaviours (Mambo et al., 2020). The authors also established that there was significant unmet needs for information, education, and services for sexual and reproductive health for married and unmarried young people. A study by Mambo et al. (2020) found out that young people do not reveal their reproductive health problems and do not use the healthcare services they actually need due to inadequate information, limited access to financial resources or negative attitudes of health workers. Other challenges faced during COVID-19 included transport problems, cost of services, curfew and less economical activities (Mambo et al., 2020). This implies that many people were not able to get enough money even to feed their families.

Literature also reveals that during the Ebola virus outbreak in West Africa, lessons learnt were that the biggest threat to the lives of women and girls was not the virus itself, but the shutdown of routine health services (Cousin, 2020).

A study by Mambo et al. (2020) reveals that, among the SRH challenges faced during the lockdown, STIs were the commonest followed by unwanted pregnancy and sexual abuses. It has been observed that SRH issues for adolescents are forgotten in humanitarian crisis times such as COVID-19. Tang et al. (2020) aver that (SRH) issues are crucial to the COVID-19 response. Strategies need to be developed to reduce the SRH challenges and their effects during crisis such as COVID-19.

Data on adolescents and young people's sexual and reproductive health care-seeking behaviour and their access to sexual and reproductive health rights (SRHR) services since the beginning of the COVID-19 pandemic lockdown was found to be relatively scarce (Mambo et al., 2020). The concept sexual and reproductive health (SRH) is relatively new and; hence, contributes to the current body of knowledge. The current study therefore sought to cover this gap by establishing SRH challenges faced by students in tertiary institutions especially during the COVID-19 lockdown. The current study was carried out to explore SRH challenges faced by tertiary institutions students during COVID-19 lockdown and suggest ways of improving SRH services among students.

Purpose of the study

The aim of this study is to explore SRH challenges faced by students and their effects in institutions of higher learning in the COVID-19 lockdown.

Objectives

- To explore SRH challenges being faced by students in institutions of higher learning during the COVID-19 lockdown.
- To establish effects of the SRH challenges faced on the wellbeing of students in institutions of higher learning during the COVID-19 lockdown.
- To suggest strategies of reducing the challenges students in institutions of higher learning during the COVID-19 era.

Methodology

The research was qualitative in nature. Since the current study explored challenges faced by college students during COVID-19 lockdown, the qualitative approach was most suitable as it involved a close examination of feelings, emotions and attitudes of college students. Qualitative research is an approach for exploring and understanding the meaning individuals ascribe to a social or human problem. The process of research involves emerging questions and procedures, data typically collected in the participant's setting, data analysis inductively building from particulars to general themes, and the researcher making interpretations of the meaning of the data (Creswell, 2014). The qualitative approach was also appropriate for this study because the inquiry was seeking to address issues that affect human beings, which are difficult to quantify (Manwa, 2014). Using the qualitative approach required the researcher to use a relatively small sample. The qualitative approach enabled the researcher to concentrate on getting a clear picture of the things as they are directly experienced by people.

The researcher employed thematic approach to analyse qualitative data collected and used the phenomenological research design. Phenomenology as a philosophy and a method of inquiry is not limited to an approach to knowing, it is rather an intellectual engagement in interpretations and meaning making that is used to understand the lived world of human beings at a conscious level (Qutoshi, 2018). The current study was determined to get a clear picture of the phenomenon under study: challenges faced by college students during COVID-19 lockdown. Data collection and analysis occurred simultaneously (Baxter & Jack, 2008). Data was analysed until saturation.

The study employed the descriptive qualitative case study methodology. The descriptive qualitative case study design is a comprehensive description of an individual case and its analysis; i.e., the characterisation of the case and the events, as

well as a description of the discovery process of these features, that is, the process of research itself. It is a description and analysis of an individual matter or case with the purpose to identify variables, structures, forms and orders of interaction between participants in the situation (theoretical purpose), or, in order to assess the performance of work or progress in development (Starman, 2014). The qualitative case study afforded the researcher an opportunity to explore a phenomenon in context using a variety of data sources (Baxter & Jack, 2008).

The population for this study comprised all 2020 first year peer educators at Mutare Teachers' College. The researcher used purposive sampling during the study. Ten peer educators in their last part of year 1 participated in the study. The sampled peer educators could easily access Wi-Fi for the online interviews. Peer educators were used because they were trained to discuss SRH issues with the rest of the student body. The researcher had also previously done some online sessions with the selected peer educators and knew that they had smart phones.

The current study used expert purposive sampling technique to select students. Expert purposive sampling was suitable for this study where the researcher looked for peer educators who had particular expertise that was most likely to be able to advance the researcher's interests (Given, 2008) of finding SRHE challenges encountered by college students during COVID-19 lockdown. In this qualitative case study, online interviews were used with peer educators. A WhatsApp group was created to discuss the research questions as a group. WhatsApp group discussions were conducted first to obtain the general information and online interviews were used to collect individual responses which gave more in-depth information. Using the two methods had an advantage of collecting both confidential and general information.

The researcher collected data using FGDs, one with male peer educators and the other one with female peer educators. Through FGDs the researcher collected data of general nature on the SRH challenges faced by students in colleges. Online interviews were used to get more confidential information from individual peer educators. The researcher went over the chats to get students' views. The researcher then captured the responses according to themes, patterns and categories of the research. In addition, the researcher continued to go over the chats until a point of saturation, when gathering fresh data no longer sparks new insights or reveals new properties and until

a comprehensive set of themes were established (Creswell, 2014). Data collection and analysis occurred simultaneously.

During all stages of the study, the researcher observed all necessary ethical considerations. Ethical issues that were considered were: permission, informed consent, confidentiality and harm to participants. Permission to conduct the research was sought and granted by the college administration. Verbal informed consent and permission was sought before the researcher engaged the participants. Participants were also assured of confidentiality and that there was no harm in participating in the study. The researcher clearly explained the purpose of the study to the participants and also explained that participants were allowed to withdraw from the interview if they so wished. Researcher also assured participants that the information they were providing was going to be treated with confidentiality. Participants were given codes instead of names for the sake of anonymity. The researcher also ensured that there was no harm to the participants throughout the study.

Table 1: Participants demographic information and code names

	Gender	
	Female	Male
	R1	R7
	R2	R8
	R3	R9
	R4	R10
	R5	
	R6	
Total	**6 (60%)**	**4 (40%)**

N=10

Results

Results are guided by the following objectives: to establish SRH challenges faced by college students during COVID-19 lockdown; to explore effects of challenges faced during lockdown and to suggest strategies to curb effects of COVID-19 on SRH of college students.

SRH challenges faced by college students during COVID-19 lockdown

The study revealed that there were a lot of SRH challenges encountered by college students during the lockdowns. Students reported that, due to the lockdowns, there was lack of accurate SRH information and services which led students to engage in unhealthy sexual activities disregarding the consequences. Also, because of the process of acquiring travelling documents, coupled with fear of contracting the virus, some students felt it was not safe to go out to get SRH services. The verbal quotes below illustrate the above view:

> Students faced serious problems in as far as accessing condoms was concerned as tertiary institutions which usually give them were closed and the process of accessing travelling documents was cumbersome (**R 1**).
>
> Due to travelling restrictions during the first lockdown phases many college students were not able to access health facilities for medication and also for SRH services because some clinics in their proximity were closed and transport challenges forced many to resort to other unhealthy ways **(R 2).**
>
> I need the SRH services, but one reason I do not want to go out is fear of COVID-19 itself **(R 7).**
>
> Students faced information crisis. Some were forced into sexual activities unaware of the consequences because of lack of information as centres of such were closed **(R 5).**

During the first lockdown, effected in March 2020, students revealed that there was limited access to transport since a few buses were travelling leaving many students stranded. People without permission letters to travel were also not allowed to travel. Students revealed that they had challenges collecting letters to go and collect family planning tablets and condoms. They mentioned that they could not approach responsible people for letters to access SRH services because of cultural and religious beliefs. Students also revealed that, since institutions were closed, there were no counsellors and trained peer educators in their communities to help them deal with their SRH challenges.

Students' views are captured in the following verbal quotes:

> Bus fare to access service providers such as the New Start Centres for advice and services was a problem **(R 4)**.
>
> It was very difficult and unacceptable to ask for a letter to go and collect family planning tablets and condoms if you are not married. You will be labelled a prostitute. The best is just not to go **(R 3).**
>
> I was not able to visit SRH facilities such as Youth Centre, New Start Centre and SAYWHAT because of movement restrictions such as transport problems and difficulty in obtaining travelling letter **(R 2).**

> At our homes there are no professional counsellors to assist us with SRH information. In the homes you find aunts and uncles assisting but their gospel is always abstinence. At times abstinence does not work **(R1).**

> Due to challenges created by the lockdown those students living with HIV were affected because of disruptions in collecting their medication leading to defaulting. Although they could get transport it means they had to show police their cards meaning confidentiality may be compromised **(R 5).**

> The absence of provision of services compromises SRH for students. Without accurate SRH information and services, some students may end up getting misleading and inaccurate SRH from peers **(IR 6).**

Students also mentioned that some of the SRH services required money. They revealed that services such as long-term methods required some money. The students revealed that they were not free to go and ask for money for SRH services from their parents. As a result, some students practised unprotected sex leading to high incidences of STIs and unintended pregnancies. Another concern raised by students was lack of adequate sanitary wear. They explained that it was difficult to get sanitary wear since most shops were closed and many parents lost their source of income. The above views are shared in the verbal quotes below:

> We need money to buy some of the long-term family planning method. You cannot go to your parent and ask her/him to give you money for family planning and condoms. It's unheard of **(R 3).**

> Getting sanitary wear was a struggle. Some of us had to resort to using clothes. Shops were closed especially during the first lockdown. We had not anticipated that it could take such a long time **(R 4).**

Another challenge that was highlighted by students during COVID-19 lockdown was lack of adequate resources. Some parents lost their everyday jobs during the lockdowns and, as a result, had no finances to provide for their families. They mentioned that children, including some students, lived in poverty. They also mentioned that students engaged into transactional sex without protection leading to STIs and unwanted pregnancy.

The following verbal quotes illustrate the above views:

> During lockdown, prostitution became rampant because students wanted to get money to survive. Because SRH services were not readily available, some students engaged in unprotected sex leading to STIs and unintended pregnancies **(R 1).**

> Some of the students started engaging into transactional sex because of lack of resources. This leads to unwanted pregnancies and spread of STIs **(R 8).**

> Most parents lost their jobs and money to use in the family was scarce. As a result, some students ended up engaging into sexual activities **(IR 9).**

The other challenge mentioned during discussions was that of lack of entertainment. The absence of entertainment led students to engage in unprotected sex. It was also revealed that, because of lack of entertainment some students, mostly males, started abusing drugs as a source of entertainment. Participants revealed that, after abusing drugs, most students could not control themselves and ended up engaging in activities that increased their risk of STIs and unwanted pregnancies.

Students shared the following views:

> The absence of entertainment facilities for students in their homes promotes casual sex as a substitute for entertainment **(R 10).**
>
> Lack of entertainment also leads to drug abuse among students **(R 8).**

Another challenge expressed by students was on online harassment. Students, especially female students, revealed that there was a lot of online harassment. They explained that there were some students who harassed others on the platforms especially on WhatsApp. Instead of students sharing SRH information on the platforms, some were busy abusing others by using vulgar words or describing other female students' structures and start mocking them.

The verbal quotes below illustrate the above views:

> One can hardly make a contribution on the platforms. There are people who abuse others. They start commenting about other people and shift from issues to do with SRH **(R 9).**
>
> In the platforms there were people who would talk vulgar and abuse others. They knew that reporting them was a challenge during the lockdown **(R 10).**
>
> Some male students would send nude pictures then delete them and say it was a mistake sending them. It's really bad **(R 7).**
>
> Some male students would take the bottom party of say, a lady with a big body and put it on the platform and later remove it. It also creates psychological problems on the part of the female student **(R 3).**

Effects of the COVID-19 pandemic on the SRH of students

The study revealed that because of challenges faced during the COVID-19 lockdown, students failed to get adequate SRH information and services. They further revealed that lack of accurate information and services led them to engage in unhealthy sexual activities disregarding the consequences. Because of lack of transport and difficulties in obtaining travelling letters, students were not able to access contraceptives and, as a result, got some STIs. The verbal quotes below confirm the findings:

> There were inadequate SRH services during lockdown. Most facilities were inaccessible **(R3).**
>
> It was very difficult for some of us to get contraceptives. It appeared no one cared. We were left in the deep end **(R5).**
>
> Because of college closure, students spent more time in the community exposing themselves to sexual activities like watching sexually explicit videos and sexual gender-based violence **(R5).**
>
> l lack of SRH services, some students started engaging in unhealthy sexual activities. They became pregnant and later decided to do illegal abortions which killed some of them **(R2).**
>
> Obtaining a travelling letter to go and access contraceptives was a challenge leading to people engaging into risky sexual behaviours **(R8).**

The findings of the study established that students were exposed to a lot of unhealthy sexual activities and sexual gender-based violence because of the reduction in access to SRH services. This scenario led to an increase in cases of STIs and HIV infections and unintended pregnancies among students. The study further revealed that unintended pregnancies increased the risk of unsafe abortions. The above views are shared in the following verbal quotes:

> During lockdown some people were exposed to sexual violence leading to an increase in cases of STIs and unintended pregnancies **(R7).**
>
> There was an increase in cases of unwanted pregnancies which increased the risk of unsafe abortions **(R1).**

The study established that, during COVID-19 lockdown many organisations and people focused more on the pandemic and little attention was given to young people's SRH leading to many youths engaging in unhealthy sexual behaviours. The above view is illustrated in the verbal quotes below:

> During lockdown, no one seemed to care about young people's SRH needs. All attention was diverted to COVID-19 pandemic leading to students engaging in drug and substance abuse and risky sexual behaviours **(R4).**
>
> Because of lack of adequate SRH services and information, cases of unwanted pregnancies and sexual abuse were on the increase **(R10).**

The study revealed that, due to shortage of resources during the COVID-19 lockdown, some students engaged in very high-risk informal employment that exposed them to sexual exploitation and abuse.

> During lockdown, there were limited resources and as a result some students were doing very risky employment such as commercial sex work and illegal panning **(R3).**

> Some students were picked up by police during the night doing all sorts of things like selling illegal hot stuff like '*musombodiya*' and others to make ends meet **(R5).**

Strategies to curb effects of COVID-19 on SRH of college students

Findings of the study revealed that there was a need ensure that issues to do with SRH of students are part of every humanitarian programme. The view is shared in the verbal quotes below:

> Young people need SRH services and information all the time. There is need to ensure that for everything that is done as far as health is concerned SRH services for youths should be in place **(R6).**

> Those people who move about talking about COVID-19 should also try and talk about SRH issues **(R3).**

The study further revealed that there was a need to make use of the communities to ensure students always get SRH services and information. The above views are shared in the following verbal quotes:

> In the communities there are village health workers. They can be provided with pamphlets and other information and also contraceptives such as condoms and family planning tablets to assist young adults **(R2).**

> There is need to consider other methods of health care services such as mobile clinics that are taken to the people **(R1).**

The study established that there was need to put systems that promote sharing of SRH information among students: The above view is shared in the verbal quotes below:

> Messages on SRH can also be regularly shared on radio and television just like what happens during campaigns **(R8).**

> Health care providers and community workers should be aware of the increased risks of abuse of students during lockdown. They should be able to respond to cases promptly and should know where to refer young adults for services in a confidential manner **(R9).**

The study revealed that there was a need to train students on how to use media to effectively share SRH information among themselves.

Discussion

The aim of this study was to establish SRH challenges faced by college students during the COVID-19 lockdown. This section discusses findings of the study in relation to the objectives of the study namely: to establish SRH challenges faced by college students during COVID-19 lockdown; to explore effects of challenges faced during lockdown and to suggest ways to curb effects of COVID-19 on SRH of college students. The

discussion of the findings is guided by the research questions, which are used as subheadings.

SRH challenges faced by college students during COVID-19 lockdown

The study revealed that college students faced so many SRH challenges during the COVID-19 lockdown. One of the challenges they faced was lack of adequate SRH information and services. The finding was shared by UNFPA (2020), Murewanhema (2020), Goulds et al. (2020), Phillip et al. (2020). The study also revealed that there was a shortage of transport on the roads and they also mentioned that one needed a clearance to travel. As a result, they explained that they were shy to collect a letter to go and access the SRH services. The other challenge students mentioned was absence of qualified counsellors and trained peer educators in their communities. Students expressed that, if they were in college, they could easily go to counsellors and peer educators for assistance.

The study further revealed that students faced a challenge of shortage of resources. They explained that were limited resources in their homes since some parents were no longer going to work. As a result, female students failed to get adequate sanitary wear and some resorted to using pieces of cloth. The study further revealed that students had no entertainment and, thus, due to boredom and monotonous daily routines, some engaged in prostitution and drug abuse resulting in sexual abuse. The view that students were short of entertainment supports findings by Yadeh et al. (2017).

Online sexual harassment was one challenge students revealed that they faced, especially female students. It was noted that male students were using vulgar language and at times sent nude pictures and quickly removed them then apologised. It was also revealed that some male students would take photos of women with huge stature and post only the bottom part of their bodies for fun.

Effects of SRH challenges faced during lockdown

The study established that, because of challenges faced during the COVID-19 lockdown, students failed to get adequate SRH information and services such as contraceptives and STI treatment. The study further revealed that lack of accurate information and services led students to engage in unhealthy sexual activities. The study further established that there was a lot of sexual gender-based violence, leading to unintended pregnancies among students. The study further revealed that

unintended pregnancies increased the risk of unsafe abortions. The above views are shared by Murewanhema et al. (2020) who established that youth were exposed to sexual exploitation and sexual gender-based violence due to closure of schools. In addition, Sully et al. (2019) also expressed that the increased cases of STIs and unintended pregnancies could be due to reduction in access to SRH services such as HIV and STIs testing, Pep, family planning pills, emergency contraception and condoms.

The study established that, during COVID-19 lockdown many organisations and people focused more on the pandemic and, thus, little attention was given to young people's SRH leading to many youths engaging in unhealthy sexual behaviours. The findings are in line with Global HIV Prevention Working Group (2020) and UNFPA (2020) findings which established that there was shortage of SRH services and information. This was due to supply chain disruptions and development partners changing focus and resource allocations towards containing the COVID-19 pandemic. Furthermore, there was closure of family planning clinics and reduced availability stemming from supply chain disruptions and delayed movements of contraceptives.

The study further revealed that due to shortage of resources during the COVID-19 lockdown, some students engaged in anything that was available to get resources that could sustain them, but putting themselves at risk. The findings are shared by Murewanhema (2020) who established that students engaged into high-risk informal employment which exposed them to sexual exploitation.

Strategies to curb effects of COVID-19 on SRH of college students

Findings of the study suggested that there was a need to ensure that issues to do with SRH of students are part of every humanitarian programme. The view was shared by UNICEF (2020) which suggested that all humanitarian plans should be sensitive to adolescents and youth specific SRH needs.

This study further revealed that there was a need of making use of the communities to ensure students always get SRH services and information. It was suggested that community health care workers could be incorporated to work with youths on SRH issues. The view was shared by UNICEF (2020) which suggested that there was a need to consider alternative methods of health-care service deliver.

The study further established that there was a need to put systems that promote sharing of SRH information among students. The suggestion was shared by UNICEF (2020) which further suggested the need to promote information sharing of young people through referral pathways.

Conclusions

This study showed that during COVID-19 lockdown, college students faced SRH challenges, for example, lack of SRH information and services, limited transport, lack of trained peer educators and trained counsellor, lack of financial and other resources, lack and entertainment and online harassment.

The SRH challenges faced by students put them at risks of contracting STIs through unprotected sex and sexual gender-based violence. The other effect of the challenges faced during COVID-19 lockdown was unintended pregnancies which led to unsafe abortion. All these effects lead to mental health problems.

The current study had some limitations. Only peer educators with smartphones and access to internet participated in the study. Focus was on Mutare Teachers' College peer educators only therefore findings of the study cannot be generalised to all students in other institutions of higher learning.

Recommendations

From the findings of this study, the following recommendations were made:

- COVID-19 interventions should incorporate youths SRH issues.
- Service providers and health practitioners should develop community support networks and ensure availability of SRH information and services for college students when they are at home.
- College students ought to be educated about online sexual harassment.
- Further studies ought to be carried out on SRH challenges such as sexual harassment faced by students in institutions of higher learning.

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Risk Perceptions towards COVID-19 amongst the Adult Population in the City of Bulawayo, Zimbabwe: An Online Based Cross-Sectional Survey

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Abstract

Zimbabwe, like other countries, has not been spared by the COVID-19 pandemic. The government adopted the WHO strict behavioural measures to prevent the spread of COVID-19. With the background that perception of health risk plays a key role in the adoption of recommended behavioural practices, this study was carried out to assess the risk perception towards COVID-19 and its determinants among adults in the city of Bulawayo in Zimbabwe. The study was an online based cross-sectional survey. Data was collected using a self-administered questionnaire which was uploaded on the Bulawayo City Council Facebook Platform. A total of 256 participants responded and enrolled for the study. Ninety-two (92) percent of the participants perceived themselves to be at risk of COVID-19 infection, whilst 96% perceived that COVID-19 is a serious condition. The risk perception was significantly associated with age, place of residence and sex. Fifty-two percent of the participants perceived that adopting at least any one of the recommended protective behaviours is beneficial, whilst 22% perceived that there are some barriers that can hinder adoption of the recommended preventive measures. More than 50% of the participants mentioned that their preferred sources of COVID-19 information were the traditional media and health workers. Proper risk communication to promote protective behaviours using health workers and traditional media is thus very essential because these are the sources that the residents of Bulawayo trust.

Keywords: COVID-19, risk perceptions, Bulawayo City, online cross-sectional survey

Introduction

The new Corona Virus (SARS-CoV-2) that has been named Corona Virus disease of 2019 (COVID-19) is a highly infectious disease that has led to the illness and deaths of people around the world. The first case was reported in the Hubei province of China on 29th December 2019 (*Statista*, 2021; Roser *et al.*, 2020). The disease has been recognised as a global public health emergency by the World Health Organisation

(WHO) on 11 March 2020. This was after cases had started to be seen outside China in less than two months. As of 4 March 2021, over 115 million people had been infected and 2.56 million deaths had been recorded in 216 countries and territories across all continents in the world (WHO, 2021). During the same period, the African continent recorded 3 915 304 cases and 104 398 deaths (Africa CDC, 2020).

COVID-19 is thought to spread mainly through close contact from person to person, including between people who are physically near each other (within about 6 feet). People who are infected but do not show symptoms can also spread the virus to others. The virus that causes COVID-19 appears to spread more efficiently than influenza but not as efficiently as measles, which is among the most contagious viruses known to affect people. This means that the primary focus for containing the novel Corona Virus outbreak is to prevent exposure through direct and close contact. The most effective way to control this type of spread is through good hygiene measures in community settings (hand washing, cough etiquette and staying home if sick) and strict infection prevention and control measures in health settings to prevent spread in hospital settings (*WHO*, 2021). Nevertheless, the effectiveness of such measures depends on the public willingness to cooperate which, in turn, has been shown to be influenced by public risk perception regarding the pandemic (Lohiniva *et al.*, 2020; Luo *et al.*, 2020; Qian and Li, 2020; Wise *et al.*, 2020). Risk perceptions refer to people's intuitive evaluations of hazards that they are or might be exposed to including a multitude of undesirable effects that people associate with a specific cause (Rohrmann, 2008). Risk perceptions are interpretations of the world and the evaluation of risks is influenced by several individual and societal factors; and different social, cultural, and contextual factors influence risk perception. Different health education and psychological models indicate that risk perception is a key driver of behaviours (Mcleroy *et al.*, 1988; Gorina, Limonero & Álvarez, 2018).

Zimbabwe has not been spared by the pandemic. The first case of COVID-19 in Zimbabwe was recorded on 21 March 2020. As of 4 March 2021, the country had recorded 36 179 and 1 478 fatalities (*Zimbabwe: WHO Coronavirus Disease (COVID-19) Dashboard*, 2021). Majority of the COVID-19 cases and deaths have been experienced in the two largest cities of the country (i.e., Harare and Bulawayo) (Zimbabwe: WHO Corona Virus Disease (COVID-19) Dashboard, 2021). Bulawayo, which is the second largest city, has contributed the second highest number of cases in the country. As of 4 March 2021, the COVID-19 statistics for the city were as shown in Figure 1:

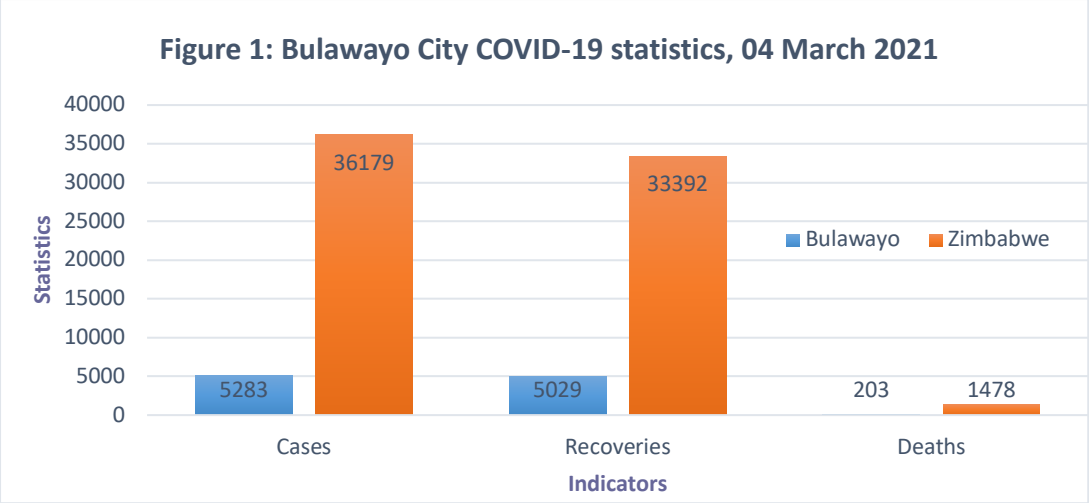

Figure 1: Bulawayo City COVID-19 statistics March 4, 2021

By 4 March 2021, the city had contributed 14.6% cases, 15% recoveries and 13.7% deaths to the national COVID-19 statistics. Despite the high number of COVID-19 positive cases and deaths in the city, some community members continued disregarding preventive measures especially in public places as evidenced by complacency in wearing masks, observing social distancing and washing of hands regularly (*The Herald*, 4 July 2020). A survey of knowledge, attitudes and practices conducted in 2020 revealed a 90% knowledge levels of COVID-19 and its prevention. However, the complacency being observed was not an indication of behaviour change in line with the high knowledge levels that were noted. This could be because of low-risk perception. Several studies have shown that, despite having high knowledge about prevention strategies, people who perceived greater risk of COVID-19 infection are more likely to implement protective behaviours, and this reduces the probability of infection (Barrios & Hochberg, 2020; Cori *et al.*, 2020). On the other hand, people who perceive themselves to be at low risk of contracting a disease or condition were unlikely to adopt recommended protective behaviours. Consequently, sound empirical data on how lay persons perceive the risks of newly emerged COVID-19 is essential to devise proper risk communication strategies. Consequently, in light of this background, this study was carried out to assess the risk perception towards COVID-19 and its determinants among adults in the city of Bulawayo in Zimbabwe. Specifically, the study sought to:

i) To assess perceptions towards susceptibility to COVID-19.
ii) To assess perceptions about severity of the disease.
iii) To determine perceived benefits of implementing preventive measures.

iv) To determine perceived barriers to adopting COVID-19 prevention measures

Conceptual framework

Van der Linden (2017) recommends the inclusion of different variables that correspond to the cognitive tradition, for example, people's knowledge and understanding about risks; the tradition, e.g., personal experience, the social-cultural paradigm; and relevant individual differences, e.g., gender, education and ideology. This "holistic" approach to modelling the determinants of risk perception prevents overreliance on a single paradigm, helps mitigate concerns about the questionable reliability of single-item constructs, and has also been adopted in recent studies of disease outbreaks (e.g., Prati & Pietrantoni 2016)

This study used the health belief model (HBM) shown in Figure 2 below as the conceptual framework.

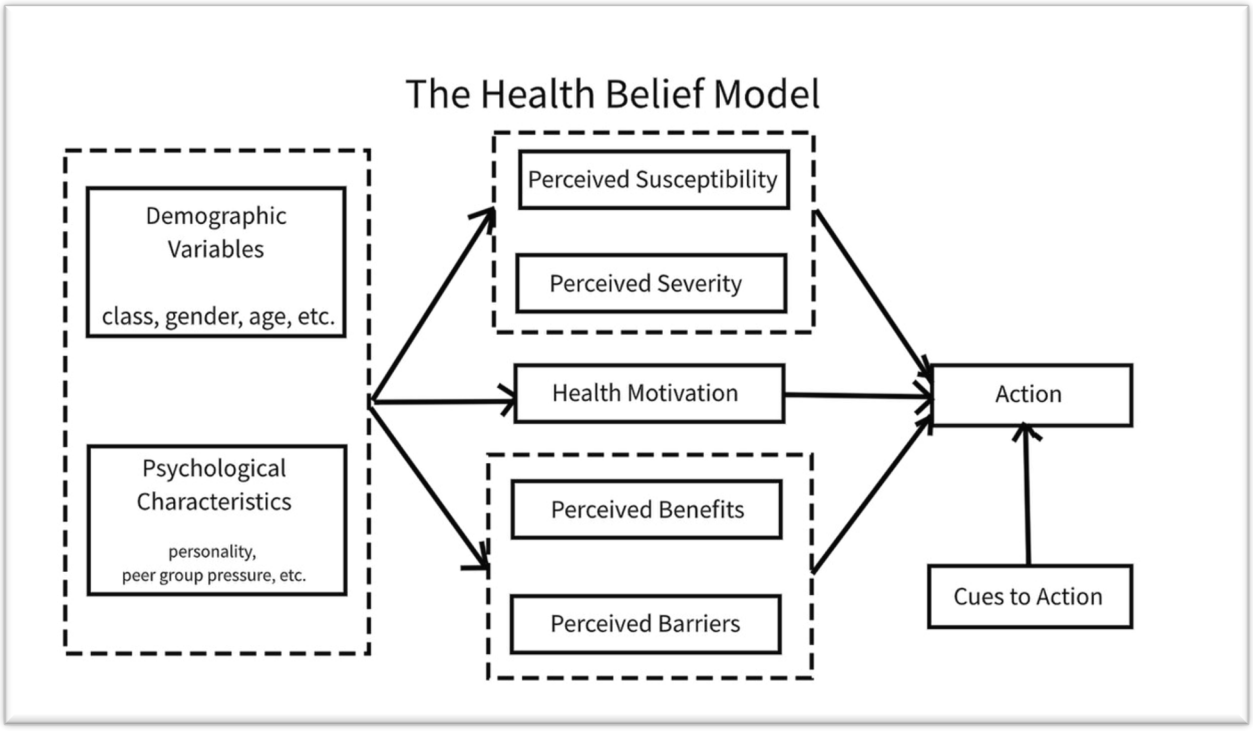

Figure 2: The health belief model

Source: **Mcleroy *et al.* (1988)**

The HBM was developed so as to understand how people get to accept or reject a health behaviour or health service (Glanz et al., 2002). It is understood that individuals accept health messages better when they believe they are susceptible to a condition, feel at risk and believe that there is behaviour change benefits. In addition to beliefs, there is a need for one to be able to overcome the barriers to behaviour change.

Study setting

This study was conducted in the City of Bulawayo in both the low- and high-density suburbs of the city. Bulawayo is the second largest city in Zimbabwe. It is located in the Matabeleland. It is considered as a metropolitan province which covers Bulawayo city and surrounding peri-urban areas. The City of Bulawayo has a total population of 753,337. Bulawayo City health department has health facilities that offer various health services to the communities. There are 19 clinics which include 4 that offer maternity services and 1 infectious disease hospital. The city is divided into 3 administrative districts, namely Nkulumane, Emakhandeni and Northern Suburbs.

Methods and materials

Study design and population

An internet based descriptive cross-sectional study was conducted among adult residents, from 1 October 2020 to 31 January 2021. Adult residents with access to Bulawayo City's social media platforms were included in the study. In this case, the Bulawayo City's Facebook (FB) platform was used. The data collection tool was uploaded on the platform and those residents who were willing to participate would complete the questionnaire on the platform

Sample size and sampling procedures

A sample size of 256 was calculated using the Dobson's formula for cross-sectional surveys. In terms of selection of participants, when the questionnaire was uploaded on the Bulawayo City FB platform, the City Public Relations Department put up an announcement on the same platform regarding the ongoing study. Adults who were free and willing would then log on and fill in the questionnaire on any day from 1 October 2020 until the sample size was reached on 31 January 2021. The youngest participant was aged 21, the oldest participant was aged 81 and the median age was 41 years. The rest of the characteristics of the study participants are shown in Table 1:

Table 1: Socio-demographic characteristics of respondents

Characteristics	Frequency (n=254)	Proportion
Sex:		
Male	102	40.1%
Female	146	57.2%
Not specified	6	2.3%
Neutral	1	0.4%
Age Group:		
20-29	34	13.7%
30-39	96	38.7%
40-49	54	23.0%
50-59	45	18.1%
60+	16	6.5%
Marital Status:		
Single	89	35.0%
Married	144	56.7%
Cohabiting	7	2.8%
Divorced	5	1.9%
Widowed	7	2.8%
Not specified	2	0.8%
Highest level of Education:		
None	5	2.0%
Secondary	27	10.6%
Tertiary	222	87.4%
Area of Residence		
Low Density	119	46.9%
High Density	127	50.0%
Unspecified	8	3.1%
Employment status:		
Unemployed	24	9.5%
Formally employed	189	74.4%
Informally employed	41	16.1%
Religion:		
Catholic	44	17.3%
Protestant	96	37.8%
Apostolic Faith	12	4.7%
Pentecostal	73	28.7%
Muslim	2	0.8%
African tradition	11	4.4%
None	16	6.3%

Data collection tools and procedures

Data were collected using a self-administered questionnaire which was uploaded on the Bulawayo City Facebook platform in a digital survey form. The questionnaire was designed based on the constructs of the Health Belief Model. The questionnaire was pretested at one of the City Health facilities before being uploaded on the FB page. Data from the pre-test were excluded from the final analysis. The questionnaire had two sections: Section A - socio-demographic characteristics; and, Section B - perceptions towards COVID-19. Section B also contained questions about

participants' preferred sources of information since these serve as cues to action. Questions on participants' perceptions towards COVID-19 were measured on a five-point Likert scale which ranged from strongly disagree to strongly agree.

Data management and analysis

Data was entered and analysed using Microsoft Excel and Stata. The analysis was mostly descriptive. In addition, Chi-square tests were calculated in order to assess the association between risk perception and area of residents (low-density and high-density suburbs)

Ethical issues

The Bulawayo City Health Department Ethics Committee reviewed the proposal before uploading of the questionnaire on the FB platform. Additionally, participants filled in the questionnaire anonymously.

Results

Two hundred and fifty-six (256) participants enrolled for the study. Out of these, 2 questionnaires were totally excluded from the analysis due to incomplete data. The study thus had a 99.2% response rate. However, some of the questions had a few missing responses and these were analysed using the available responses. Therefore, there were less than 254 responses in some questions. To this end, the total number of responses would be specified for each question.

Perceptions towards COVID-19

Majority of the participants either strongly agreed or agreed that they were at risk of getting COVID-19. Majority also strongly agreed and agreed that COVID-19 is a serious condition. Nevertheless, there were a significant proportion of participants who perceived that there were some barriers to adoption of the recommended COVID-19 practice. The barrier that was mentioned by majority of the participants was that using hand sanitisers can cause skin reactions. Table 2 shows the responses of participants on different perceptions towards COVID-19.

Table 2: Participants responses on perceptions towards COVID-19

Questions	**n**	**Responses n(%)**				
		SA	A	N	D	SD
A: Perceived Susceptibility: I am at risk of getting COVID-19	252	157 (62)	76 (30.6)	17 (6.8)	1 (0.4)	1 (0.4)
If I am in contact with someone who has tested positive, I am at a higher risk	254	193 (76)	49 (19.3)	8 (3.1)	2 (0.8)	2 (0.8)
I can have COVID-19 with no sign and symptoms	254	163 (63.9)	74 (29.2)	12 (4.8)	5 (2.1)	0
Going to crowded places like markets increases my risk of infection	254	206 (81)	44 (17.4)	2 (0.8)	2 (0.8)	0
Going to crowded places like funerals increases my risk of infection	253	196 (77.5)	54 (2.3)	2 (0.8)	1 (0.4)	0
Not wearing my mask properly in crowded places increase my risk of infection.	254	210 (82.4)	39 (15.3)	4 (1.6)	1 (0.4)	0
Perceived Severity:						
COVID-19 is a serious disease.	253	191 (75)	52 (21.2)	7 (2.8)	2 (0.8)	1 (0.4)
COVID-19 spreads fast.	253	191 (75)	52 (21.2)	7 (2.8)	2 (0.8)	1 (0.4)
There is no treatment specific for COVID-19.	254	153 (60)	73 (28.6)	15 (5.9)	2 (0.8)	0
Being infected by COVID-19 can lead to complications	254	154 (60)	80 (31.5)	13 (5.9)	7 (2.8)	0
Being infected by COVID-19 can lead to death.	254	148 (58)	71 (27.8)	20 (7.8)	12 (4.7)	3 (1.2)
Perceived Benefits:						
Washing of hands at all times with soap and water or a sanitiser protects me from COVID-19	254	133 (52.4)	99 (38.8)	16 (6.4)	3 (1.2)	3 (1.2)
Maintaining social distancing in public places protects me from COVID-19	254	146 (57.5)	88 (34.7)	14 (5.5)	2 (0.8)	4 (1.5)

Coughing on the inside of my elbow prevents the spread of the virus.	253	113 (44.7)	110 (39.5	28 (11.1)	5 (2.0)	6 (2.4)
Perceived Barriers:						
If I wear my mask, I feel uncomfortably hot	253	58 (22.9)	128 (50.1	29 (11.5)	27 (10.7)	10 (3.9)
If I wear my mask, I am not able to breathe well.	253	28 (11.8)	98 (38.5)	54 (21.0)	57 (22.5)	16 (6.1)
Washing my hands all the time makes them dry and chipped.	253	17 (6.7)	57 (22.6)	52 (20.7)	90 (35.7)	36 (14.3)
I have no access to water for washing my hands.	254	38 (15)	58 (22.8)	36 (14.2)	82 (32.2)	40 (15.8)
It is difficult to stand 1 metre apart in public spaces	254	66 (26)	82 (32.3)	23 (9.1)	50 (19.7)	33 (13)
I have no access to soap to use for hand washing	254	11 (4.4)	26 (10.3)	28 (11.1)	129 (51)	59 (23.3)
Using hand sanitisers makes my skin react	253	10 (4)	41 (16)	47 (18.9)	109 (43.1)	46 (18.2)

Knowledge of COVID-19

Majority of the participants had knowledge of COVID-19 basic facts, transmission mechanisms and prevention strategies. About 17% indicated that they did not have knowledge of management and treatment of the condition as shown in Figure 2:

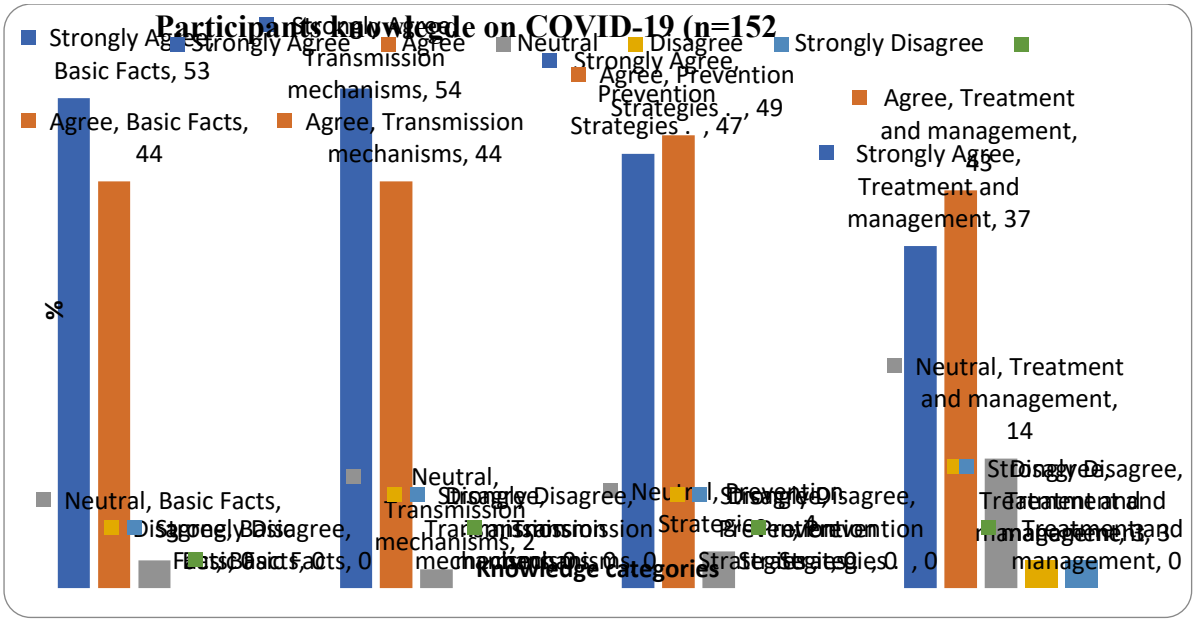

Figure 2: Participants' knowledge of different aspect of COVID-19

Current and preferred information sources

Participants' responses about their current and preferred information sources are shown in Table 3 and Figure 3 respectively

Table 3: Respondents' current sources of COVID-19 Information

Information sources	Freq.	Percent	
Health Workers	17	6.75	Health
Workers, Internet	7	2.78	
Academic articles	2	0.79	
Internet	27	10.71	
Social Media	43	17.06	
Social Media, Health Workers	2	0.79	
Social Media, Health Workers, Internet	15	5.95	
Social Media, Internet	11	4.37	
TV/ Radio	18	7.14	
TV/ Radio, Health Workers	1	0.40	
TV/ Radio, Health Workers, Internet	5	1.98	
TV/ Radio, Internet	6	2.38	
TV/ Radio, Social Media	9	3.57	
TV/ Radio, Social Media, Health Workers	85	33.7	

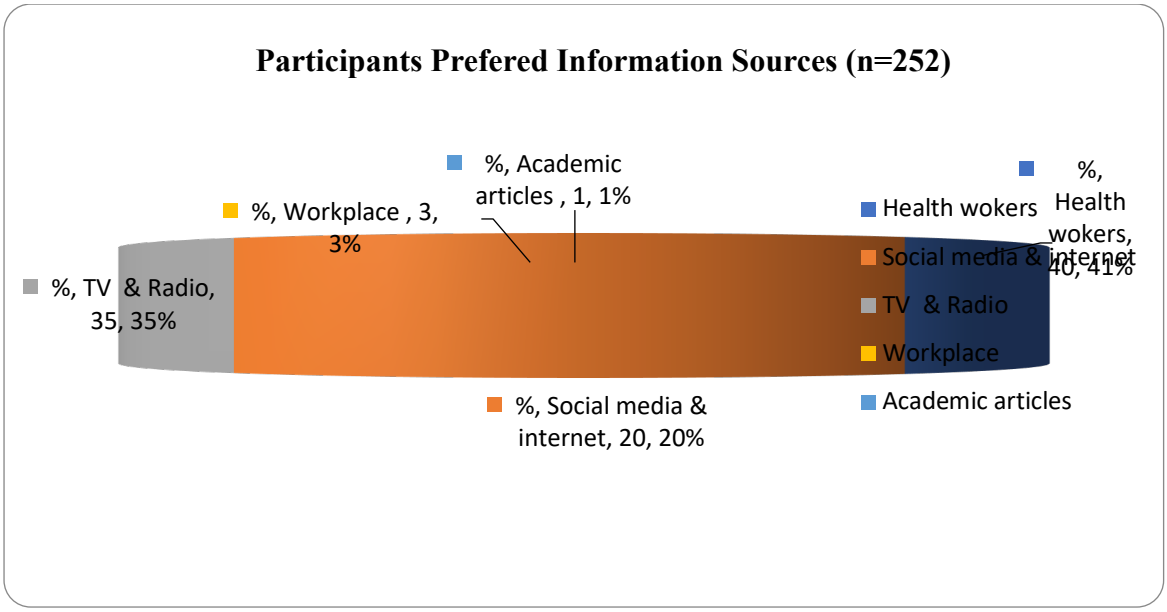

Figure 3: Respondents' preferred sources of COVID-19 information

Association between perceived risk of COVID-19 and socio-demographic variable

There was an association between perceived risk and age-group, sex and place of residence as shown in Table 4 below:

Table 4: Association between Risk perception and socio-demographic variables

Variable	Pearson Chi-square	p-value
Level of education	4.7	0.78
Age group	51	0.00
Sex	72.1	0.003
Place of residence	40.4	0.004

Discussion

The aim of this study was to assess the risk perception towards COVID-19 among adult residents of Bulawayo City. This was informed with the background that the number of cases of COVID-19 continues to increase in the City of Bulawayo as people were not adhering to the WHO recommended preventive measures. According to (Dryhurst *et al.*, 2020), disease spread is influenced by people's willingness to adopt preventative public health behaviours, which are often associated with public risk perception. Therefore, it was of paramount importance to carry out this study in order

to gather evidence that would assist in improving the ongoing COVID-19 interventions.

In terms of perceptions towards COVID-19, i.e., perceived susceptibility, perceived severity, and perceived barriers and benefits of adopting recommended preventative measures, this study found out that the majority of participants either strongly agreed or agreed that they were at risk of getting COVID-19. The majority also strongly agreed and agreed that COVID-19 is a serious disease, but there were a significant proportion of participants who perceived that there were some barriers to adoption of the recommended COVID-19 practice. These findings are consistent with findings from Ethiopia (Asefa *et al.*, 2020, Motta Zanin *et al.*, 2020) and Germany (Gerhold, 2020).

The high perception of risk is not surprising since the majority of participants indicated that they had knowledge about the basic facts and transmission of COVID-19. As postulated by several behaviour change experts, risk perception is a product of knowledge of the disease in question as well as other factors (Mcleroy *et al.*, 1988). It may also mean that people who perceive high risk of COVID-19 are more likely to seek knowledge about the condition in order to prevent themselves from being infected. However, due to the cross-sectional nature of the study, one could not ascertain the temporal relationship between risk perception and having knowledge. Nevertheless, high risk perception among participants who have knowledge about COVID-19 was also previously reported in studies in Ethiopia (Asefa *et al.*, 2020) and China (Kwok *et al.*, 2020).

It was also interesting to find out that the majority of participants preferred to obtain information about COVID-19 from health workers, radio and TV, with social media being relatively lowly preferred. These findings are congruent from findings in the studies in Taiwan and America, where it was found out that traditional media such as TV was the most preferred source of information because it can be trusted (Ali *et al.*, 2020; Wang *et al.*, 2020). This is not surprising since the internet and social media have been in the past implicated in spreading false information. Therefore, people would rather get information from health workers whom they trust. As postulated by Mackworth-Young *et al.* (2020) in their assessment of community perspectives on COVID-19 in Zimbabwe, people are concerned about trusted sources of information.

This implies that health workers should be careful about the methods they use to disseminate COVID-19 information and ensure that trust is created.

In terms of the relationship between risk perception and socio-demographic variables, this study found out that age group, place of residence and sex was significantly associated with risk perception. Similarly, Asefa *et al.* (2020) and Luo *et al.* (2020) noted that risk perception significantly varies by socio-demographic variables.

Our study had some limitation too. Due to the cross-sectional nature of this study, it was not possible to assess how risk perceptions change over time. Furthermore, the temporal relationship between risk perception and other variables could not be established. Data collection was also limited to people who had access to the Bulawayo City Council Facebook platform, therefore, the views of those adults who could not access the internet may not have been represented.

Conclusions and recommendations

Higher level of risk perception was found regarding the COVID-19 among adult residents of the City of Bulawayo. The risk perception was significant, especially with age, place of residence and sex. There was immense knowledge of COVID-19 and the most preferred sources of information were health workers and traditional media (i.e., radio and TV). Proper risk communication to promote protective behaviours using health workers and traditional media is thus very essential because these are the sources that the residents of Bulawayo trust. It would be of paramount importance to continuously assess the risk perception at another interval since the perception of risk changes according to the intensity of the outbreak

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Survivors' Perceptions Regarding the Management of COVID-19 Symptoms through Traditional Medicines, Coping Strategies and Vaccination in Bikita, Zimbabwe

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Abstract

The qualitative study explored how adult Bikita community members survived the symptoms of the COVID-19 disease and the uptake of the vaccination programme in the area. In order to establish the survivors' perceptions, semi-structured interviews were carried out with the adults who had tested positive and survived the symptoms of the pandemic in the last 12 months. The study participants were chosen through purposive and snowballing techniques. Thematic content analysis was utilised in analysing the collected data. Findings from the study reveal that the major COVID-19 symptoms experienced by the participants included having breathing and talking difficulties; chest pains; head ache; tiredness as well as experiencing sore throats. The prominent traditional medicines utilised to manage the symptoms were mufandichimuka/myrothamus flabellifolius, zumbani/lippia javanica and ginger root. Steaming or kufukira/kunatira was perceived as a coping strategy. These traditional medicines and coping mechanisms were perceived as effective in alleviating the symptoms with no further complications. Vaccination was perceived as important in order to protect everyone. However, vaccine uptake in the area was low during the period of the study. There was need to streamline information dissemination from national to village level as some members interviewed were not fully aware of the vaccination programme.

Keywords: COVID-19, *dzihwamupengo*, *kufukira/kunatira*, traditional medicine, vaccines

Introduction

The deadly COVID-19, an epidemic disease caused by a new coronavirus which was first identified in the year 2019 in Wuhan city, Hubei province of China, has traumatised the world to unprecedented levels leaving some questions on what individuals, families and communities can do in order to contain it. The World Health Organisation (WHO) declared the coronavirus disease outbreak a public health emergency of international concern on 30 January 2020 (Novel Coronavirus Situation Report, 2020) and indications are that the world may continue grappling with this virus for the unforeseen future.

The *Coronavirus Disease Situation Report* is published periodically by the World Health Organisation (WHO) with the express intent of fostering preparedness and response, and currently points to alarming levels of the rise in infection (Coronavirus Disease 2019 Situation Summary, 2020; Zhang, Wu & Zhang, 2020). The symptoms of the coronavirus disease include a dry cough, shortness of breath and fever (WHO, 2020; CDC, 2021). The virus that causes the COVID-19 disease has been named SARS-Cov-2 and the disease this virus causes has been christened coronavirus disease 2019 abbreviated as COVID-19 (Coronavirus Disease Situation Summary, 2019). The capability of COVID-19 to infect anyone has been long-established (WHO, 2020), and the rate at which the infectious disease spreads has caused fear and many problems around the world. It is noted that the use of medicinal plants to treat and prevent COVID-19 has been spreading in places like Nepal, Madagascar and sub-Saharan Africa (Chan, Wong & Tang, 2020). Apart from the known risks posed by the COVID-19 pandemic, not much has been studied on traditional coping strategies which are utilised by people in communities.

Infectious diseases have been effectively managed through vaccinations since the beginning of the twentieth century. Vaccination remains a simple and safe way of saving lives (Dzinamarira, Nachipo, Phiri & Musuka, 2021), and its successes have been witnessed in managing a wide range of infectious and child killer diseases (Greenwood, 2014). UNICEF is calling on governments, donors and stakeholders to double their efforts and encouraging parents to continue vaccinating their children to protect them from preventable diseases (MoHCC, 2021). It is noted that one in five children in Africa do not receive the necessary vaccines, and COVID-19 has complicated things further as there is a drop in routine immunisations during the pandemic. Vaccination programmes are also facing challenges as growing populations, like the Zimbabwean one, require more vaccines and resources (Dzinamarira, Nachipo, Phiri & Musuka, 2021). Zimbabwe took delivery of the Sinopharm COVID-19 vaccine in mid-February 2021 and the roll out began during the same period (Dzinamarira et al., 2021). Given the reason that there is no cure yet in sight for the deadly respiratory disease, it was incumbent to investigate the efficacy of traditional medicines; the uptake of vaccination, coping strategies and their effect in alleviating symptoms of COVID-19. Thus, the present study sought to give some insights on the coping mechanisms and the uptake of the COVID-19 vaccination programme in the study area.

This present research, therefore, sought to answer the following research questions:

a) What are the perceptions of the use of traditional medicines in managing COVID-19 symptoms?
b) How are coping strategies being implemented in managing COVID-19 symptoms?
c) To what extent are coping mechanisms effective in managing the epidemic?

Methods

Research design

The study adopted a qualitative research paradigm in the form of a case study. The researcher intensively studied a single case or phenomenon on the assumption that it is typical of other cases (Creswell, 2012) and closely examined the data within a specific context (Bikita). This case study was also informed by the principles of grounded theory which is a philosophy used to generate theories regarding social phenomena and to be able to explore subjective experiences of Bikita community members in the utilisation of COVID-19 symptom relief strategies through systematic data analysis (Creswell, 2012; Salkind, 2012). The case study design enabled the researcher to get enlightened on why the participants considered the various symptom relief interventions as effective or ineffective: why it was being done, how they were implementing it and with what impact in their health.

Study population

The population of interest for this study was all 30- to 50-year-old adults who had tested positive and survived the symptoms of COVID-19 in the past 12 months. The COVID-19 epidemic has been extant since December 2019 to date. It was assumed that the research participants would have been implementing the symptom relief interventions and coping mechanisms in managing COVID-19 during the same period. The research participants were given informed consent statements and a structured interview schedule which were also translated into Shona language.

Sample and sampling procedures

The researcher chose twenty participants in the 30- to 50-year-old bracket as he needed a small sample which had to be focussed. A non-probability, purposive sampling technique was also adopted as a method of selecting the sample, where the researcher chose the participants who had willingly divulged that they had tested positive and

survived and would be able to answer interview questions. Snowballing was used to select the sample wherein an interviewee would recommend another interviewee. Some of the participants included those who had stayed in quarantine centres. The researcher was guided by the assumptions of how meaning is generated and the adequacy of the data; so, the researcher did not predetermine the sample at the beginning of the study.

Ethical considerations

The researcher observed some ethical considerations like confidentiality, informed consent, privacy, respect and anonymity of the subjects (Makore-Rukuni, 2004). Confidentiality involved the researcher's obligation to keep all data and disclosures private and secret (Creswell, 2012).

In informed consent, the participants or participants would choose to or not to participate in the research (Creswell, 2012). All relevant information concerning the study was detailed to the participants in respect of the pros and cons of participation; hence, the participants were free to decide.

The anonymity and privacy of the participants would ensure that confidentiality is maintained, unless consent to release information would be withheld (Makore-Rukuni, 2004).

Respect of client rights, trustworthiness and dignity were also upheld. This in turn would incorporate privacy, confidentiality, autonomy and respecting the religion and culture of the participants (Creswell, 2012). The following ethical safeguards were be employed in protecting participants:

a) The research informants were made aware of the voluntary nature of their participation and that they could withdraw from the study any time without any penalty.

b) The objectives of the study were delineated to the participants.

c) An informed consent statement was sought and obtained from each research participant before carrying out the study.

Validation strategy

On validation strategies, qualitative researchers utilise various validation strategies to make their studies credible and rigorous (Creswell & Miller, 2000). Thus, credibility was achieved using the validation strategies of researcher reflexivity, thick rich description and peer debriefing. The rich description was achieved by presenting the participants' voices under each theme and by providing detailed description of each case. The researcher finally sought the assistance of peer debriefers conversant with qualitative data analysis.

Data collection

The tool used for data collection in this study was the interview schedule (a set of interview questions) which comprised qualitative questions. The short qualitative questions were used to obtain information about current conditions and practices in COVID-19 symptom alleviation and to make inquiries concerning attitude and opinions of adults in quick and in precise forms (Kombo, 2006; Chiromo, 2006).

Data analysis and interpretation

Data analysis took the form of thematic content analysis. The aim of analysis was to determine whether any pattern or trends can be identified or isolated into established themes in the data (Creswell, 2012). For the thematic analysis, the researcher also utilised the techniques suggested by Braun and Clarke (2013). The authors used flexible qualitative methods which include familiarising oneself with the data, generating initial codes, reading through each transcript to immerse in the data, reviewing themes, defining and naming themes and producing the final report.

Results and discussion

Demographic characteristics of the participants

The study participants were asked to highlight their age ranges as it was felt that many could have been uneasy at releasing their exact ages to unfamiliar persons. The age ranges of the participants are presented Table 1:

Table 1: Age distribution of the participants

Responses	Frequency
Below 30 years	3
30-35 years	5
35-40 years	9
Over 40 years	3
Total	**20**

The participants' perceptions of the effect of traditional medicines used to manage symptoms of COVID-19 in rural Bikita

The researcher asked participants to delineate COVID-19 symptoms they suffered and their perceptions of any traditional medicines they used for alleviation of the symptoms and their effect. The following symptoms of the COVID-19 disease, which the participants referred to as *dzihwamupengo* in their native Shona language or *wild flu* [English], were indicated:

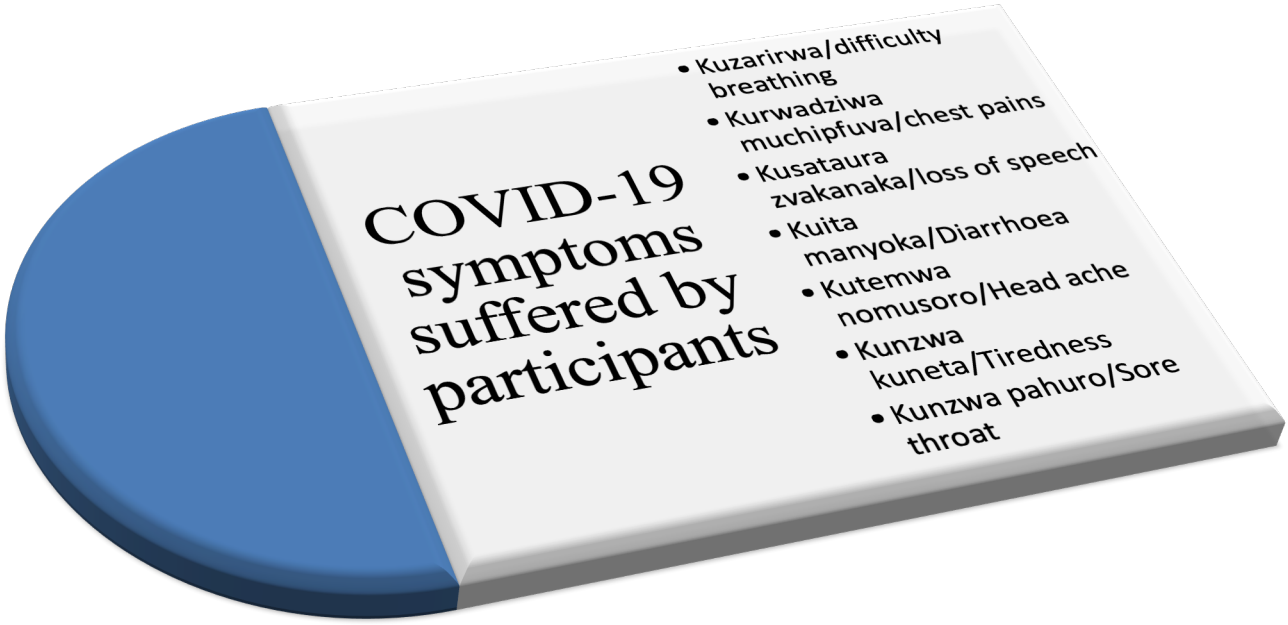

Figure 1: COVID-19 Symptoms experienced by the participants

From the Figure 1 above, the COVID-19/*dzihwamupengo* symptoms which participants experienced were *kuzarirwa*, which is, experiencing breathing difficulty; *kurwadziwa muchipfuva*, that is, chest pains; *kusataura zvakanaka*/having difficulty talking; *kuita manyoka*/diarrhoea; *kutemwa nomusoro*/head ache; *kunzwa kuneta*/tiredness as well as *kunzwa pahuro*/sore throat.

The majority of participants indicated that they considered the use of traditional medicines as a priority each time they suffer the symptoms of COVID-19, which they called *dzihwamupengo* or *wild flu*. Figure 2 presents the prominent medicinal plants they used:

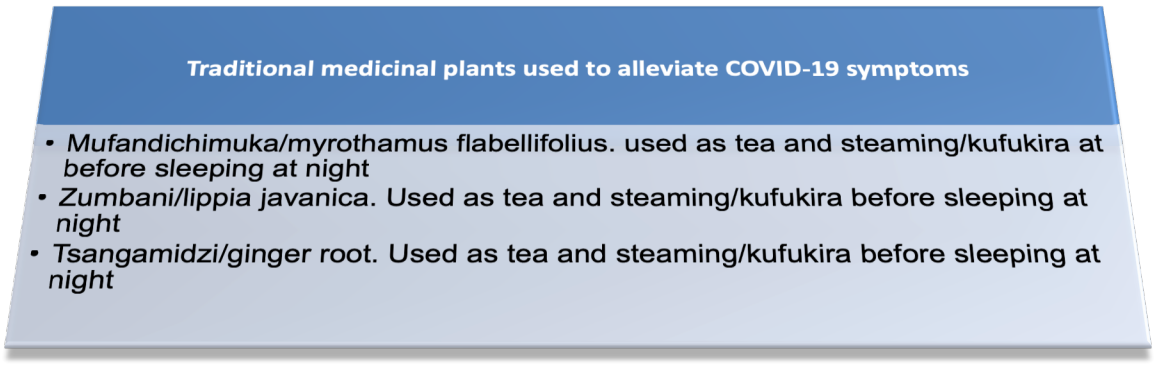

Figure 2: The traditional medicinal plants used to alleviate COVID-19 symptoms by the participants

From Figure 2, the prominent traditional medicines utilised were *mufandichimuka* /myrothamus flabellifolius /, *zumbani*/lippia javanica and *tsangamidzi*/ginger root. The researcher had to probe further on why participants considered the medicines effective and below is one such response proffered:

> I prepare *zumbani* tea and have it in the morning and evening each time I suffer COVID-19 symptoms. I feel the airways loosened and breathing becomes easier. I feel better in less than a week when I take this tea every day. [Participant 4: Male]

Asked to explain how *zumbani* tea is prepared, the participants indicated that they put one teaspoon of *zumbani* dried leaves, in their raw form in each cup of boiled water. One may add a little sugar to taste. This herbal tea or medicine is traditionally used to treat coughs, common colds and to bring down fever. Apart from use as tea, the participants indicated that they boiled a bundle of fresh *zumbani* leaves in water and used the hot mixture for steaming. The participants reported that there were no known health complications or side effects in using *zumbani* as tea or steaming.

The participants highlighted some of the benefits of steaming which included loosening chest congestion which causes shortness of breath in some COVID-19 patients. They described steaming as *kufukira* or *kunatira* or taking a hot steamy bath. One such respondent described an important role played by steaming:

> Each time I suffer from adverse symptoms of COVID-19, I practise steaming before bedtime. I have never suffered any side-effects. Let us all use such medicines without side-effects. However, there might be need for more studies to

> identify whether or not there may be some complications in using medicinal plants like these. [Participant 17: Female]

During night-time steaming, the participants explained that they boiled a bundle of fresh *zumbani* leaves in a potful of water, spread a mat, remove clothes, cover themselves with a blanket or towel and open the hot pot. Hot and most air coming from the open pot would then loosen up the airways and make breathing easier. In some places where there is no *zumbani*, the survivors used *mufandichimuka* as this respondent indicated:

> *Mufandichimuka* is readily available where I come from. We use some to prepare tea. When symptoms are severe, we have two cups of *mufandichimuka* tea in the morning and evening. Sometimes we steam using boiled *mufandichimuka* each evening even when symptoms are severe. [Participant 12: Female]

Mufandichimuka/myrothamus flabellifolius or resurrection tree or resurrection bush was widely used to treat coughs and some symptoms of COVID-19 in the study area. The participants described it as a small woody plant with tough branches. During wet periods of the rainy season, the plant is evergreen, but during the dry season or most periods of the year, the stems and leaves become red-brownish. The plant turns green quickly when it comes into contact with water. The plant grows between 30cm and 50cm in height. The participants prepared *mufandichimuka* tea from the small red-brownish dried leaves and twigs. The participants also indicated that they put three dried twigs of *mufandichimuka* into one litre boiling water. They steep for about 10 to 15 minutes until a light amber coloured mixture is formed. They would consume one cup of *mufandichimuka* tea in the morning and another in the evening to alleviate symptoms of *dzihwamupengo* within five days at most.

Participants also reported using *tsangamidzi* or ginger as tea in managing some of the symptoms of COVID-19. When one had a sore or inflamed throat, sipping ginger tea especially laced with lemon juice was relieving. The participants prepared a ginger tea by adding about 20 grams of fresh *tsangamidzi* or ginger slices to a cup of hot water. This was left to steep for a few minutes before being consumed. To improve the taste, some participants added two teaspoonfuls of sugar or honey. The participants did not report any side effects after using *tsangamidzi.* Steaming/*kufukira* was also practised using ginger. Inhaling the steam from ginger worked in relieving nasal congestion in less than two days. Nasal congestion often resulted in shortness of breath in some participants.

When symptoms become severe, some of the participants indicated blending fresh ginger roots with a few cloves of garlic in a cup of boiling water. However, some such participants lamented lack of medicinal herbs in some places to manage the symptoms of *dzihwamupengo*. A respondent who hails from Manyuchi area where there are no *mufandichimuka* and *zumbani* shrubs had this to say:

> I purchase ginger roots from the Birchenough Bridge Vegetable Market. I feel better each time I have a cup of *tsangamidzi* tea. [Participant 9: Male]

Ginger was also believed to dry out excess mucus in lungs when one catches the symptom of the COVID-19 disease.

Participants' perceptions on other COVID-19 symptom alleviation mechanisms

Information gleaned from the interview schedule reveals that coping with the coronavirus disease symptoms was generally meant to get relief while the immune system fights the disease as a cure is yet to be found. Apart from the usual masking up to avoid contracting it or infecting others and avoiding crowded places, the participants reiterated that they used steam inhalation to relieve themselves from some of the negative symptoms of COVID-19. This respondent just indicated that they use steaming to alleviate symptoms of *dzihwamupengo*:

> I feel better each time I practise steaming using hot water only. [Participant 11: Female]

Asked to describe the steaming process using water only, the participants indicated that they collected a bowl, water, a kettle and a big towel. Then they heated up the water until it boiled; put the water into a bowl; draped the water over their heads. After that they shut their eyes, inhaled slowly and deeply through the nose up to five minutes. They repeated the steaming up to three times a day when they had severe symptoms. The symptoms disappeared after five days.

The participants' perceptions on the uptake of COVID-19 vaccination among Bikita community members

There were some participants who felt that vaccination was critical in controlling the spread of the COVID-19 disease. Those participants who had information and were familiar with the vaccination programme indicated that a person needed 2 shots given 3 weeks apart and, to be fully vaccinated, 2 weeks should lapse after one's second short. One respondent indicated the need to protect everyone from COVID-19 through encouraging everybody to getting inoculated:

> We need to consider taking the vaccines because the countries which have vaccinated their populations like the UK currently have achieved a higher herd immunity. In the UK, lower infection and death rates are being reported. Let us all participate in this mass prevention exercise. [Participant 8: Male]

Another participant who also supported vaccination indicated thus:

> Let us all participate in prevention and get vaccinated. We need to consider social justice whereby we need to protect the vulnerable (older people) through participating in vaccination. We need to protect everyone. [Participant 13: Male]

However, the vaccination programme currently was not covering all the people as this participant indicated:

> Front line workers were given first priority in accessing vaccination. Not all people have access although all clinics around the country were supported with the vaccines. [Participant 14: Female]

On a disturbing note, vaccine uptake was met with mixed feelings. During the first days (end of February, 2021), vaccine uptake was slow, reasons attributed to one's choice and lack of prior clinical trials to ascertain vaccine effectiveness and complications as this participant noted:

> Vaccination is by choice. No one should be forced to be vaccinated. The vaccines have been in the country a couple of months ago and their complications are yet to be felt. The vaccines cannot be trusted because people continue to practise COVID-19 safety protocols even after getting the vaccine jabs. [Participant 10: Female]

Asked what could be done to improve vaccine uptake, this participant had this suggestion:

> There is a need for the government to educate people on the need for taking up the vaccines. [Participant 8: Male]

However, it was noted that COVID-19 had caused a bigger divide on what was happening in urban areas (growth point) and rural areas of Bikita. A greater number of the population are in the remote areas of the countryside and have no access to information on vaccination. This participant, did not have knowledge of the program, and had this to say:

> I have no knowledge of how the vaccine we should take would work in my body. I have no information on the side-effects of the vaccine I should take. We need such information in these rural areas. [Respondent 18: Male]

Some of the participants also reiterated that there is a need to streamline information dissemination from national to village level. Information needs to be readily available for everyone.

Discussion

There is dearth of literature on the uptake and effectiveness of traditional coping strategies in managing the symptoms of COVID-19 or *dzihwamupengo* disease in many places of Zimbabwe. The survivors' voices in terms of perceptions of specific medicines and coping mechanisms; their successes and challenges needed to be recorded, hence the necessity of the present investigation. It was also pertinent to gain a picture of the uptake of vaccination in the study area.

Participants indicated that they prepared herbal tea from *zumbani*, *mufandichimuka* and ginger roots. This herbal tea or medicine is traditionally used to treat coughs, common colds and to bring down fever. Steaming was also practised using fresh bundles of the plants boiled in water. Where these medicinal plants were scarce, steaming using hot water steam only alleviated COVID-19 symptoms. Symptom relief was believed to be realised after five days of either tea or steaming. Currently, there are no known health complications or side effects in using *zumbani* tea or steaming. Inhaling steam is mostly used in getting relief from the symptoms of colds and other respiratory infections. Warm moist air is believed to loosen the nasal passages in the throat and lungs. This helps the individual to feel better during the periods the body's immune system would be fighting off the infection. Breathing in hot steam also eases out feelings of irritation, thus offering relief although on temporary basis. Apart from irritation or discomfort from inhaling hot steam, no other severe side effects are reported from steaming. In view of these highlighted coping mechanisms, it can be noted that natural products and herbal medicines have been historically used in places like Nepal, Madagascar and sub-Saharan Africa (Chan, Wong & Tang, 2020) for acute respiratory infections (WHO, 2020). Furthermore, hundreds of clinical trials have been set to tackle COVID-19, however, evidence of the efficacy of natural remedies is still arguable.

There was also a low turnout for vaccination in some places of the study area. This is viewed as a national problem as less than a million people have been vaccinated in a nation of 14 million people (MoHCC, 2021). This is notwithstanding the fact that Zimbabwe launched its national vaccination programme in February 2021 with the

express intent of achieving herd immunity by the end of the year 2021. This confirms the findings in an earlier study on Zimbabwean and South African vaccine uptake (Dzinamarira, Nachipo, Phiri & Musuka, 2021). On another note, authorised and recommended vaccines which are being rolled out in many countries include Pfizer-BioNTech, Moderna, Astrazeneka, Novavax, Sinopharm and Johnson & Johnson. Some of these vaccines are yet to find their way into Zimbabwe. The Chinese-made Sinopharm, currently being administered in Zimbabwe, was granted Emergency Use Authorisation by the World Health Organisation (WHO, 2021).

There were some participants who had knowledge of the low uptake of vaccination in the area under study. This also confirms results from an earlier study which notes that vaccine uptake in Zimbabwe at present is very low given lack of scientific evidence on their effectiveness (Dzinamarira, Nachipo, Phiri & Musuka, 2021). This factor is also attributable to the general uptake of vaccines worldwide by the different populations who have misgivings on their safety and efficacy and this has resulted in vaccine hesitancy in some members. Vaccines and other marketed anti-viral drugs are the most promising option in combating COVID-19 at present (WHO, 2021). Notwithstanding all the public health successes in reducing the spread of infectious diseases through vaccines, a large portion of the global population still expresses concerns about the safety and efficacy (Peretti-Watel, Larson, Ward, Schulz & Verger, 2015). The reasons why some sections of the population resist vaccines are yet to be comprehensively studied although adequate advertisements or communication, promotion of campaigns may effectively address some of the factors which make people snub them.

Conclusions

The study presented some most promising traditional medical interventions in managing COVID-19 as perceived by participants. Traditional medicinal plants like *mufandichimuka*/myrothamus flabellifolius, *zumbani*/lippia javanica and *tsangamidzi*/ginger root play a role in managing COVID-19 or *dzihwamupengo* disease symptoms.

Other alternative coping mechanisms included steaming or *kufukira/kunatira.* Vaccination is important to protect everyone from contracting COVID-19. However, some of the members of the population in the remote areas have no access to important information on vaccination.

Recommendations

- There is a need to upscale research in utilising traditional medicinal plants in COVID-19 symptom alleviation.
- There is need for the government to educate people on the need for taking up the COVID-19 vaccines.
- There is a need to streamline information dissemination from national to village level so that people gain confidence and make informed choices regarding vaccination.

Area for further research

Future research should cover wide areas and broad surveys on the effect of different traditional medicinal plants in managing COVID-19 symptoms.

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Exploring the COVID-19 Induced Interest in Lippia *Javanica* (*Zumbani / Umsuzwane*) and *Myrothamnus Flabellifolius* (*Mufandichimuka / Umfavuke*) in Zimbabwe: A Data Mining Approach

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Abstract

The COVID-19 pandemic has given rise to new dietary intake habits as individuals and populations search for solutions. There have been reports of increased consumption of lippia javanica (zumbani / umsuzwane) and myrothamnus flabellifolius (mufandichimuka / Umfavuke) for treatment and prophylaxis though research data is missing. Recently internet search data has been used to examine patterns and behaviour useful to inform public health campaigns and policies. The aim of this study was to investigate the effect of COVID-19 pandemic on the usage of zumbani and mufandichimuka herbs. The key words "zumbani" and 'mufandichimuka" were searched using specific time periods (March 2019-Jan 2020 and March 2020 to January 2021 and location (Zimbabwe) as filters on google and twitter. These periods were defined as pre- and post-COVID-19 periods respectively. Mentions on Twitter were defined as any instance in which the keyword occurred including original tweets, replies and retweets. Data was entered into Microsoft Excel version 2018. Descriptive statistics were generated using SPSSv22 (IBM Microsoft Inc). An unpaired t-Test was used to compare means (mentions pre-COVID-19 against post-COVID-19 times). Significance was set at $p<0.05$. Zumbani was mentioned 7725 times from the onset of the COVID-19 pandemic in Zimbabwe in March of 2020 to January 2021 and only 58 times during a comparable period from March 2019 to January 2019 while mufandichimuka was mentioned 216 and 7 times during the same periods respectively. Mentions of both herbs peaked in January of 2021. Search interest was significantly higher in the COVID-19 period than the pre-COVID-19 period for both zumbani ($p<0.05$, $t=4.825$, $df=96$) and mufandichimuka ($p<0.05$, $t=3.487$, $df=96$). The study revealed a surge in searches for zumbani and mufandichimuka. We conclude that there was an increase in the online interest of these herbs, this may indicate an increased use of the herbs among the studied population. However, this remains to be proven by intake studies. There is need for future research into determining actual intakes, manner of usage and the efficacy of natural herbs in these times of the COVID-19 pandemic.

Keywords: Herbal tea, phenolics, antioxidants, *zumbani, mufandichimuka,* Zimbabwe

Introduction

In the last twenty years, interest in herbal teas has increased (Bhebhe et al., 2015). Herbal teas have been shown to have several perceived and actual medicinal properties such as boosting immune system, lowering blood pressure, preventing strokes, cancer and cardiovascular diseases (Hong et al., 2014). Although there has been a reported increase in awareness and marketing of herbal teas, information on actual consumption and or usage is scarce. Traditional herbal teas have not been as readily available and marketed as commercial imported herbal teas These commercial herbal teas such as Rooibos™ are slightly more researched as opposed to the local ones (Bhebhe et al., 2015). Consumption and utilisation of indigenous plants such as lippia javanica popularly known as zumbani/umsuzwane and myrothamnus flabellifolius popularly known as *mufandichimuka/umfavuke* as foods and medicine in Zimbabwe has been practiced for generations (Maroyi, 2013).

Zumbani is rich in essential oils whose composition includes key phytochemical and phenolic components that play a role in its antioxidant and free radical scavenging activities as well as other medicinal functions (Chagonda & Chalchat, 2015; Lukwa et al., 2009; Viljoen et al., 2005). Mufandichimuka has been shown to contain key phenolic and phytochemical compounds with autoinflammatory, antidiabetic and antioxidant properties (Atawodi, 2005; Mazimba et al., 2015; Molefe-Khamanga et al., 2012; Viljoen et al., 2000). The leaves of both herbs are used to treat colds and chest related problems in Zimbabwe (Maroyi, 2017).

The COVID-19 pandemic has revived interest in these herbs as people are turning to folklore remedies to treat and combat the symptoms of the virus. The herbs are even used as prophylaxis and as immune boosters. Though herbs have numerous health benefits improper usage and overdose can be detrimental to one's health. Enough public health education is required to accompany use of such alternative medicine. It is possible that ingestion of these local herbal teas has increased during the covid pandemic. However, with the absence of dietary intake studies, the rate of usage remains unknown. We have used social media data analytics as a proxy measure to determine local herbal tea usage trends. Social Media has emerged as a key tool to obtain market and consumption trends with twitter especially being an easy and important crowdsourcing platform to acquire spontaneous information elicited from

real life situations (Sass et al., 2020). The aim of this study was therefore to investigate the effect of COVID-19 pandemic on the usage of *zumbani* and *mufandichimuka* herbal teas. Data from Twitter and Google was used to compare the mentions of the specific traditional herbs during the COVID-19 period and a comparable pre-COVID-19 period (Coogan et al., 2018).

Methods

Study design

A data mining approach was utilised for this study. We utilised Google trends website (https://trends.google.com) and also Twitter's web API (http://github.com/sixohsix/twitter) to extract and analyse data on the trends on the peak searches around *zumbani* and *mufandichimuka* in pre- and post-COVID-19 times. Google trends is normally used to study trends in epidemics or any health phenomena in myriad ways (Carneiro & Mylonakis, 2009). The data mining approach relies on large populations of web search users to detect spikes in search volume on topics of interest as part of health surveillance. Search query data has been used before as a proxy measure of increased usage of certain foods and beverage. Furthermore it can be used as a surveillance tool for dietary behaviour at a population level (Coogan et al., 2018) .

Data capturing

The keywords '*zumbani*' and '*mufandichimuka*' were searched using specific time periods and location (Zimbabwe) as filters. March 2020 (when the first COVID-19 case was reported in Zimbabwe to January of 2021 was selected as the COVID-19 period and March 2019 to January 2020 as the pre-COVID-19 period. Mentions on Twitter were defined as any instance in which the keyword occurred including original tweets, replies and retweets. Aggregated search popularity was used to determine Google search interest ranked from 0 up to 100.

Key word association

A sample 1116 posts collected from 20 to 23 January 2021 were used to look for common words associated with the mentioned keywords on Twitter. Search word associations on all searches was used for Google. Data was entered into Microsoft Excel version 2018. Descriptive statistics were generated using SPSSv22 (IBM Microsoft Inc). An unpaired *t*-test was used to compare means. Significance was set at $p<0.05$.

Results

Zumbani was mentioned 7725 times from the onset of the COVID-19 pandemic in Zimbabwe in March of 2020 to January 2021 and only 58 times during a comparable period from March 2019 to January 2020 while *mufandichimuka* was mentioned 216 and 7 times during the same periods respectively. Mentions of both herbs peaked in January of 2021 (Table 1), with highest peak dates on 19/1/21 (663) and 17/1/21(24) for *zumbani* and *mufandichimuka* respectively.

Table 1: *Zumbani* and *mufandichimuka* mentions by month from Mar. 2020 to Jan. 2021

Year	Months	*Zumbani*	*Mufandichimuka*
2020	March	18	14
	April	101	12
	May	166	8
	June	23	0
	July	38	5
	August	1000	32
	September	105	13
	October	37	16
	November	37	6
	December	80	8
2021	January	6120	102
	Total	**7725**	**216**

Search interest was significantly higher in the COVID-19 period than the pre-COVID-19 period for both Zumbani ($p<0.05$, $t=4.825$, $df=96$) (**Figure 1.)** and *mufandichimuka* ($p<0.05$, $t=3.487$, $df=96$) (**Figure 2**). Of the total searches for *zumbani* and *mufandichimuka* the COVID-19 period accounts for 96% and 83% respectively.

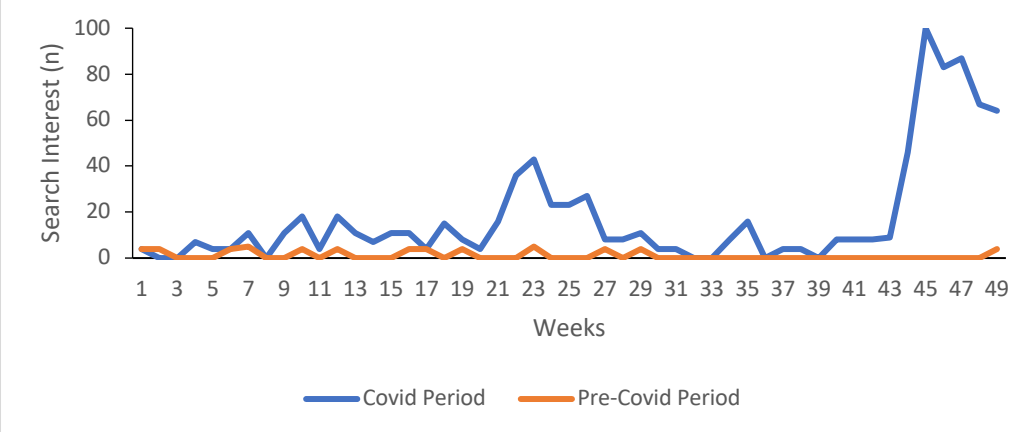

Figure 1: Google Search Interest for Zumbani during March 2020 to January 2021 (Covid Period) and March 2019 to January 2020 (Pre-Covid Period)

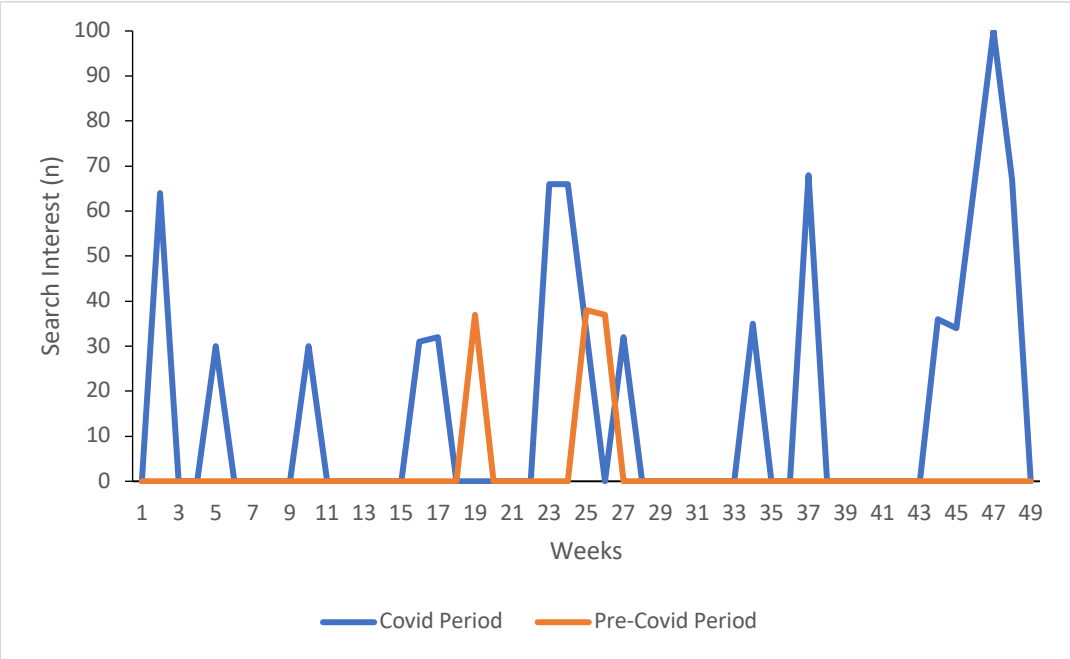

Figure 2: Google Search Interest for Mufandichimuka during March 2020 to January 2021 (Covid Period) and March 2019 to January 2020 (Pre-Covid Period)

Search interest for *zumbani* was spread throughout the country in the COVID-19 period (Figure 3a.) and only concentrated in Harare Province in the pre-COVID-19 period (Figure 3b) while interest for *mufandichimuka* was concentrated in Harare Provinces for both periods (Figures 3c, 3d).

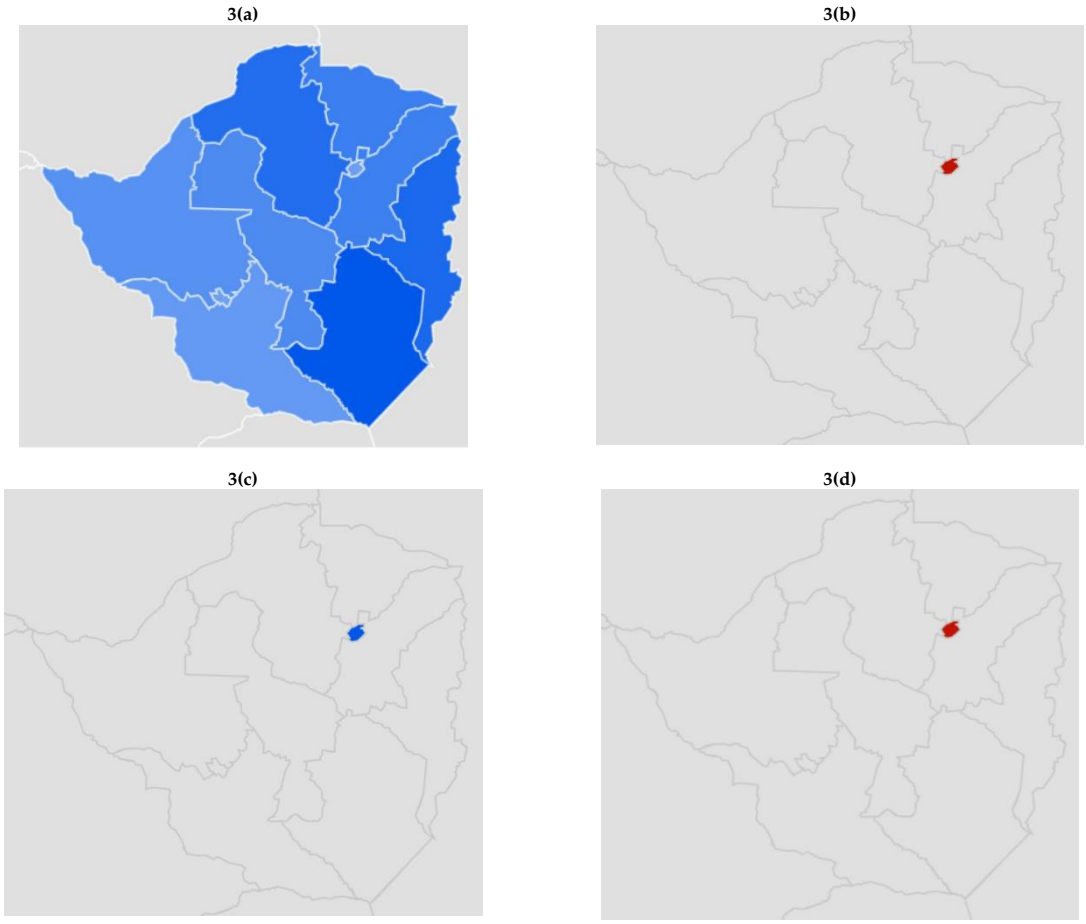

Figure 3: Google Search interest by province for zumbani in the COVID-19 period (3a) and the pre-COVID-19 period 3(b) as well as for mufandichimuka (3c and 3d) respectively

The following words were strongly associated with the keywords on Twitter: *Covid, using herbs, kunatira (steaming), sick*, and *people*. On Google the following queries were related to zumbani in decreasing popularity Zumbani tea (100), Zumbani benefits (100), zumbani tea benefits (63), zumbani plant (44), zumbani in English (41) and zumbani tree (23) and for mufandichimuka; mufandichimuka tea (100) and mufandichimuka herb (43).

Discussion

This study sought to investigate the effect of COVID-19 pandemic on the potential usage of *zumbani* and *mufandichimuka* herbal teas. Data from Twitter and Google was used to compare the mentions of the specific traditional herbs during the COVID-19 period and a comparable pre-COVID-19 period. The study showed a dramatic

increase in the number of times the words *zumbani, mufandichumuka* and related words were searched in comparison with a similar period pre covid. This may have indicated an increase in usage of these herbal teas. Data on market trends (sales or market supply) may have helped to validate this trend however studies have validated search query data and shown that at the population level it can be related to behavioural changes . Google trend data has been used in several studies before for disease surveillance (Pelat et al., 2009), monitoring and predicting disease outbreaks (Zhou et al., 2011) and determining popularity of diet supplements (Kamiński et al., 2020). Limited data is available showing how this pandemic is affecting dietary behaviours (Mayasari et al., 2020) and hence proxy measures such as search trends are useful. Restricted movement and an elusive cure have forced individuals to search for immune boosting substances. Top among these are herbal teas. However these immune boosting teas have to be used with caution as evidence has shown that they can be toxic (Ridker, 1987).

Twitter trend data has also been used in a study to understand consumer perception of eggs (Sass et al., 2020) and in studies tracking disease outbreaks, epidemics and pandemics (W Ahmed et al., 2017; Wasim Ahmed et al., 2019). Twitter has proved to be an important public health research tool to study trends related to illness and conditions (Nelson & Staggers, 2013) . Health epidemics attract bursts of attention on platforms like Twitter (Ahmed, 2017), making twitter invaluable in studying coping mechanisms used by people during the COVID-19 pandemic, key among them being herbal teas.

This study had the following strengths. During the study, researchers had access to high volume population level data hence a large sample size was used. This is the first analysis of its kind and provides new evidence collected during a difficult period of restricted movement and human interaction. However, the study had limitations in that researchers did not assess actual dietary intake, but rather search interest. It also does not distinguish between consumption and use for other purposes such as steam inhalation, massaging and rubbing. We therefore could not attribute the increase in search behaviour to increase in consumption. The limitations of using internet search data is well acknowledged (Nuti et al., 2014). It does not detail user characteristics, offers no explanations concerning the qualitative aspects such as reasons for the peaks and we are unsure how the analytics are generated. Monthly pattern search query data is however useful and can be associated with population level behaviours. This

has implications on public health education messages during pandemics. Overconsumption of herbal teas can be toxic (Ridker, 1987), and the practice of steaming can lead to burns and injuries (Baartmans et al., 2012). It is imperative that policy makers access such information in a timely manner in order to advise populations accordingly.

Conclusions

We conclude that there was an increase in the online interest of *zumbani* and *mufandichimuka* herbs. This may indicate an increased use of the herbs among the studied population. However, this remains to be proven by intake studies. There is a need for future research into determining actual intakes, manner of usage and the efficacy of natural herbs in these times of the COVID-19 pandemic.

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Psychological Difficulties and Coping Skills in the midst of COVID-19 Pandemic amongst Individuals Living with HIV/AIDS at Mabelreign and Marlborough Satellite Clinics in Harare, Zimbabwe

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Abstract

The current study sought to explore the psychological difficulties and coping skills experienced and utilised by adults (30 - 50 years) living with HIV and receiving ART treatment. A qualitative approach was utilised to guide the research procedures. Phenomenological research design was used in the current study. Participants were selected using a non-probability sampling method, that is, random sampling. Data collection was done utilising semi-structured interviews. A total of 10 participants 5 males and 5 females were selected. Research findings were analysed by interpretive phenomenological analysis: Results from the study reviewed experiences of anxiety, depression and obsessive compulsive disorder related symptoms as psychological challenges being experienced by people living with HIV during the COVID–19 pandemic. Overall, the presence of a strong support systems as well the use of spiritual resources was reported as key coping mechanisms being utilised by PLWHIV to deal with COVID-19 psychological vulnerability. From the study results, it is therefore recommended that Zimbabwe should formulate a national psychological readiness plan for pandemic and epidemic disease control specifically targeting people living with HIV. In conclusion, early psychological assessments and interventions must be prioritised post-pandemics particularly in provinces where susceptibility and prevalence were high.

Keywords: Psychological vulnerability, psychological coping, COVID–19, anti–retro viral therapy (ART), human immunodeficiency virus (HIV)

Introduction

According to Tichenor and Sridhar (2019), HIV is a global pandemic that has existed for over four decades, causing high paediatric and adult mortality rates predominately in Eastern and Southern African countries. According to a UNAIDS report of 2021, over 36.7 million people were infected with HIV and from that total, 4.5 million are adults above 30 years of age. In 2019 the novel corona virus was reported and it has promptly become a major cause of mortality around the globe (Hengbo Zhu, Li Wei & Ping Niu, 2020). On March 20, 2020, Zimbabwe announced its first case of COVID-19 (Muronzi, 2020).

Various studies that conducted in different parts of the world have indicated that COVID-19 deaths are hugely associated with adults living with medical underlying conditions like HIV, the elderly and people from low socio-economic status who have limited access to ventilators and other respiratory machines (Fiorillo & Gorwood, 2020). The psychological impact of COVID-19 amongst people living with HIV in particularly reference to African countries is not known. Whilst, people living with HIV are highly vulnerable to various psychological challenges. The emotional burden of HIV/AIDS infection among PLWHIV is very heavy when compared to other populations (Liang, 2018). Various studies have shown that PLWHA have twice the rate of psychological problems, most notably depression, as to the general population (Ganzalez, 2020).

Zimbabwe like many other African countries is characterised by limited to absent strategic psychological preparedness plans in its continuum of pandemic and epidemic control (McCabe & Links, 2012). In the presence of COVID-19, the absence of psychological preparedness plans has exposed people living HIV to unbearable emotional and psychological pain resulting in high unattended cases of mental illnesses (Gifford, 2007). Unattended mental illnesses in people living with HIV contributes to poor ART adherence and generates decreased performance functioning post-pandemics, which has economic and health ramifications.

A report by the World Health Organisation - China Joint Mission published on February 28, 2020 based on 55,924 laboratory confirmed cases of COVID-19 presented a mortality rate of 7.5%. The high mortality recorded amidst people infected with COVID-19 in China, provoked an investigation to explore the psychological challenges/difficulties and coping skills being experienced and utilised by people living with HIV/AIDS in the face of COVID–19 in Zimbabwe. The concept of psychological coping was defined from a personal pragmatist approach which is considered as an all-inclusive demonstration of all sides of human personality by which one can resourcefully handle responsibilities (Calcaterra, 2017).

Worldwide the absence of well-structured psychological interventions for people living with HIV in the presence of COVID–19 is impacting overall functioning causing physical incapacitation, emotional instability and distress (Weeks, 2000). The absence of psychological evaluations and coping strategies to manage effects of COVID-19 is creating a deficiency in people living with HIV with possible short- or long-term

effects (Wahlström, 2010). Pandemics are debilitating and are characterised by reduced sense of worthiness, which trigger high prevalence of suicidal ideations and suicidal completion cases (Schmuckler, 2004). This was clearly evidenced in West Africa in 2014 after the Ebola pandemic as most people manifested grief related symptoms characterised by prolonged episodes of Sadness and suffering (Parpia, 2016). According to Kamara (2017), in a study conducted in Sierra Leone, grief related symptoms experienced by some individuals escalated to Complex grieving which was set apart by pathological symptoms resulting in depressive symptoms. Similarly, in Zimbabwe active COVID-19 cases are exposing people living with HIV at greater risk of psychological distress.

Definition of key terms

i) Psychological vulnerability: A set of cognitive schemes that increase the sensitivity to stress and leads to a sense of dependence (Sinclair, 1999)
ii) Psychological coping: A series of trials or cognitive process utilised in dealing with stressful or unpleasant situations or in adjusting an individual's responses to such a condition (APA Dictionary of Psychology)

Objectives

i) To explore prevailing psychological difficulties being experienced by people living with HIV midst COVID-19 pandemic.
ii) To investigate psychological coping skills utilised by people living with HIV towards dealing with COVID-19 pandemic.

Research questions

i) What are some of the psychological difficulties being experienced by people living with HIV midst COVID-19 pandemic?
ii) What are the psychological coping skills being utilised to deal with COVID-19 pandemic by people living with HIV?

Methodology

Research design

Phenomenological research design was used in the current study. It was the most appropriate research design for the current study as it gave participants the freedom to respond in the way they feel comfortable. This allowed them to share their thoughts

and experiences without any limitations something which other designs do not permit (Marks, 2004).

Participants

The study involved ten (10) participants of five (5) males and five (5) females living with HIV. The reason for the small sample size was based on the strength of qualitative approach which comes from understanding how and why, not understanding the how many questions (Van Manen, 2014). The small sized sample supported the depth of case-oriented analysis, that is, fundamental to qualitative research (Braun & Clarke, 2013). The selection and participation of study participants was conducted on two different days at each clinic respectively, on a voluntary basis. The first day involved the researcher sharing the objectives of the study to the bigger group of HIV patients at each clinic. Thereafter, those that agreed to participate were given consent forms and informed to expect a call from the researcher to schedule an appointment for the in-depth interview.

Sampling

Participants were selected using a non-probability sampling method, that is, random sampling. From the bigger group that completed and submitted back the consent forms, the researcher only selected 10 participants randomly to participate in the study. Random sampling offered an equal and fair chance to all HIV patients at the clinic to be enrolled in the study on the day of selection. Random sampling facilitated the usage of the small sample required for the study with no further segmentation needed to refine the group size down (Miles & Huberman, 2015).

Data collection and instrumentation

Data collection was conducted at Mabelreign and Marlborough Satellite Clinics in Harare, Zimbabwe, using in-depth interviews, guided by a semi-structured interview guide template. Interview length varied from 15 - 20 minutes. The semi-structured interview guide composed of two sections, that is, section A and section B. Section A had demographic questions and section B had questions which goes in hand with the objectives of the study. A semi-structured interview guide combines a pre-determined set of open questions, questions that prompt discussion with the opportunity for the interviewer to explore particular themes or responses further (Smith, 2008).

Data analysis

The current study used the interpretive phenomenological analysis to analyse research findings. The approach is concerned with the understanding of events, relationships or processes which are of some significance to the participants (Smith, 2015). The approach involved a detailed examination of the participants' current life experiences living with HIV. In parallel it attempted to explore personal perceptions or accounts to produce an objective statement of the impact of the COVID-19 - pandemic. Interpretive Phenomenological Approach allowed the researcher to get closer to the participants' personal life therefore gaining from an insider's perspective as eluded by Conrad (2007).

Results

The findings of the study are presented under the following major headings: demographic and socio-economic characteristics, psychological problems and coping skills utilised and experienced by people living with HIV in the midst COVID-19 pandemic in Harare, Zimbabwe.

Demographic and socio-economic characteristics

Table 1: Demographic characteristics of the study participants

Characteristic	Participants (n=10)	
	N	%
Gender		
Males	5	50%
Females	5	50%
Age		
30 – 40 years	7	70%
40 – 50 years	3	30%
Marital Status		
Married	4	40%
Divorced/Widowed	5	50%
Single	1	10%
Education		
Secondary or more	8	80%
Primary or less	2	20%
Current employment status		
Permanent (Full time/Part Time)	2	20%
Casual Self employed	8	80%
Main Income source		
Own business/salary	2	20%
Partner/family	3	30%
No income	5	50%
Suffer from chronic illness		
No	0	0%
Yes	10	100%
Reason for clinic visit		
Routine/family/antenatal	10	100%
Other reason		0%

Table 1 indicates an equal distribution of the study participants by gender, with males contributing 50% similar to the 50 % for females. Some 70% of the participants where in the 30 – 40 years band with 30 percent in the 40 – 50 years band. Pertaining to marital status characteristics, 40% of the participants were married, 50% where either divorced or widowed and 10% reported to had never been married hence single. Majority of the participants, 50%, reported not having a source of income, 30 % depend on family/ partner for support and 20 % have a consistent source of income.

Theme 1: Psychological challenges being experience by PLWHIV midst COVID-19 pandemic

Depression and anxiety

Self-reports from 40% of the study participants indicated that COVID-19 is causing extreme emotional vulnerability experiences. This is characterised by social anxiety and fear caused by life uncertainty based on their HIV positive status. A 33-year-female participant said the following:

> *… kubva zvandakaziva nezve COVID-19, dzimwe nguva ndinofungisisa maereranano nezvichauya muhupenyu hwangu ndichirarama ne HIV. (From the time I was informed about COVID-19, I think deeply of what lies ahead in my life as I am living with HIV).*

The huge experience of depression and anxiety related symptom amongst female participant when compared to males reflected a gender difference towards psychological burden amongst people living with HIV. To a greater extent, male participants were not concerned about COVID–19 in relation to their HIV positive status, rather 30% of the male participants reported worry over an inability to sustain their families as COVID–19 restrictions are limiting movements. A 37 years male participant said the following:

> *Ndakazvitarisa,* HIV *iri nani pane* COVID-19 *nekuti tinotora mapiritsi edu as usual hupenyu huchifamba asi* COVID-19 *yauraya mhuri dzedu nenzara. Isu tinorarama nekutengesa hachichakwanisi kuita mabasa edu* (…personally I think HIV is better than COVID–19 because I can take my drugs and live a normal life but because of COVID-19, we are now unable to provide and sustain our families accordingly…)

A 43 years male participant said the following:

> *Ndinogara ndega. Ini ndaimbowa ne* corner store *mu* town *yandairenter, iko zvino yakavharwa. Handina mari yekubhadhara muridzi ari kukumbira rendi yake. Handina mari uye hapana wekutaura naye. Ndine mhirizhonga yakawanda mupfungwa uye ndinonzwa kusurukirwa* (I stay alone, I used to do have a small corner store in town that i was renting which is now closed because of COVID-19. I have no money to pay the owner who is asking for rent. I have no savings and no one to talk to. I have a lot of tension and I feel lonely).

Feelings of hopeless vs. immunocompromised

In the study, over 50% of the participants revealed that COVID–19 is triggering vulnerability and hopelessness emotions. Over 70% of the participants are immunocompromised characterised with underlying health conditions and low CD4 cells. Majority of the participants have a high chance of disease severity and possible fatality if infected with COVID-19. A 44-year-old male participant said the following:

> *… ndakamborwara nechirwere che tuberculosis (TB) muna 2017, ndirikushungudzika kuti hazvindiise panjodzi yekutapurirwa utachiona hwe COVID 19 zviri nyore*. (I once had tuberculosis (TB) in 2017, I am worried that might make vulnerable to getting infected with COVID-19).

Obsessive compulsive disorder related symptoms

Results from the current study revealed possibilities of long-term behavioural changes like vigilant and repetitive hand washing and sanitisation which meet the obsessive compulsive disorder criterion. Some 90% of the participants indicated an elevated self-care conscience to disinfect themselves. A 37-year-old lady said the following:

> *… kuburikidza nekupararira kuri kuita hutachiona hwe COVID-19, ndiri kutevedzera nzira dzakatarwa dzekuzvidziwirira nguva dzose*. (Because of the high spread of the COVID-19, I am strictly following recommended safety measures at all times).

From the results, it was commendable and encouraging noting a high level of adherence to COVID-19 protocols by over 90% of the participants. However, all participants were behaviourally going to extremes in an endeavour to manage and prevent possible COVID-19 infections.

Theme 2: Psychological coping skills being utilised by PLWHIV towards dealing with COVID-19 pandemic

Online support groups

From the study, 80% of the participants reported to be belonging to online support groups which kept them engaged and in touch with their colleagues as well health service providers. A comparison of support groups' active participation by gender reflected a ratio of 60% females to 40% male. Online interaction was repeatedly mentioned as significant towards problem sharing and enhanced emotional wellbeing. A 47-year-old man said the following:

> *… ndiri muma group epa WhatsApp evanhu vari kurarama nehutachiona hwe HIV umo tinokurudzirana nguva dzose kuti tirambe tichinwa mishonga yedu.* (I joined WhatsApp groups for PLWHIV where we consistently remind each other to adhere to our medication.

Spiritual resources

Some 30% of the study participants reported utilising spiritual or religious coping skills in the face of COVID-19. At the same time, 10% provided narratives that equates COVID-19 as a spiritual blessing to a certain extent as they expressed that it strengthened their spiritual wellbeing with more time to pray and fast without disruptions. A 36-year-old woman said the following:

> *… panguva ino ye COVID ndirikushinga kuzviisa pedyo naMwari, izvi zvirikundibatsira zvakanyanya kuti ndiwe netariro yehupenyu.* (During the COVID - 19 era i have been placing myself closer to God, this has kept me going as I have hope for my future ahead).

Some 40% of the male participants did not align themselves to a particular religious group. However, from their narrative reports, an increased use of substances was noted towards coping with COVID-19 related stressful experiences.

Minimising inquiry on COVID-19 information

A comparison of responses from 70% of the study participants with underlying medical health conditions to the 30% with unknown underlying medical conditions revealed that those with underlying medical conditions were experiencing more

psychological distress related symptoms. Self-reports of life uncertainty and confusion were reported exacerbated by inadequate and incorrect information regarding the nature and spread of COVID–19.

However, as a psychological coping strategy, 40 % of the male participants reported to be minimising their inquiry on COVID-19 transmission and its association to HIV. A 50-year-old male participant reported the following:

> … *ndakasarudza kutevedzera zvinotaurwa paZimbabwe Broadcasting Cooperation (ZBC) chete maererano nemafambiro eCOVID-19 muZimbabwe* (I have opted to following only one information source that is Zimbabwe Broadcasting Cooperation (ZBC) for COVID-19 trends in Zimbabwe).

Minimising COVID-19 information overloads was enormously reported as essential towards psychological coping amongst people living with HIV as COVID-19 information overload contributes to overwhelming feelings and powerless resulting in fatigue and inability to take daily actions.

Discussion

The study revealed a number of mental health gaps, psychological challenges and informal coping strategies being experienced and utilised by people living with HIV in the midst of COVID-19 at Mabelreign and Marlborough Satellite Clinics in Harare, Zimbabwe. Findings from the current study indicated that people living with HIV are, to a greater extent, psychologically vulnerable to the effects of COVID–19. They experience hopelessness and fear feelings triggering anxiety and depression related symptoms. Findings from the study are similar to those of a study conducted in Pune, India, in 2020 that assessed the burden of anxiety among people living with HIV. In India, however, depression and anxiety during the COVID-19 lockdown impacted over 50% of people living with HIV from disadvantaged socio-economic status, with huge concerns aligned to availability of anti-retroviral therapy drugs.

Over 80% of the current study participants reported to be belonging to an online support group for peer-to-peer support that significantly enhanced their mental wellbeing. These results merge with findings from a study conducted in the Philippines in 2021 that assessed whether online support groups during the COVID-19 pandemic were a necessity or an added calamity. It was reported that online support groups are a crucial intervention in public health, capacitating people living with HIV to collaborate and promote the common good of their wellbeing. Results from the current study further concur with findings from a meta-analytic study done

by Seabrook, Kern and Rickard (2016) which reported high quality online social interactions, social support and social connectedness as key tools towards dealing with symptoms of depression and anxiety. Supporting the meta–analytic study by Seabrook et al. (2016) are findings by Tsai, Tsai, Wang, Chang and Chu (2010) which reported video conferencing as an intervention pivotal to alleviating depression and loneliness.

In the current study, 30% of the participants reported utilising spiritual resources to cope with psychological challenges associated with COVID-19. The results of the current study are closely aligned to a study conducted in Spain during the initial stages of COVID-19 showing how spiritual wellbeing is a protective factor for depression and anxiety (Sanguino, 2020). Furthermore, a study conducted in Jordan by Melhem et al. (2016) on perceptions of spirituality and spiritual care amongst people living with HIV revealed that spiritual care contributes significantly to their overall mental wellbeing.

An online survey conducted in China in 2020 on information overload, wellbeing and COVID-19 reported that spending time receiving information about COVID-19 is related with positive wellbeing (Fan & Smith, 2021). In contrast, perceptions of COVID-19 information overload due to COVID-19 are associated with more negative wellbeing. However, findings from the current study indicatee that males have resorted to minimising information inquiry regarding the nexus between HIV and COVID-19 and this was closely associated with feelings of calmness, fostering positive psychological state.

Conclusion

The current study sought to investigate the prevailing psychological challenges and coping skills being experienced and utilised by people living with HIV between (30 – 50 years). A combination of depression, anxiety and obsessive compulsive disorder related symptoms were identified. However, the current study offered a backbone to future studies that will conduct in-depth quantitative researches to screen and assess the various psychological related disorders identified. Conclusively, COVID–19 is a novel disease globally. Its management requires collective efforts to minimise transmissions to all people of different health statuses.

Recommendations

The result of the current study recommends that the Ministry of Health and Child Care in Zimbabwe should formulate a national psychological preparedness plan for epidemic and pandemic diseases. The plan should be extensive and contain contextual variations utilising positive coping approaches with cultural and religious foundations and elements. The national psychological preparedness plan should incorporate short, medium and long-term actions towards full recovery of individuals and groups, building a secure setting that encourage communal existence and maintain family reformation.

Epidemics hinder emotional growth of individuals hence post-epidemics; emotional support must be a priority incorporated in the daily actions of a prepared societal grouping thereby attending to the people's fundamental requirements. Emotional support should be provided for grieving people, giving emphasis to culturally appropriate interments and rites.

Psychological disorders are progressing, escalating from mild to severe. As a result, the researcher recommends early psychological assessments and interventions post-epidemics particularly in communities where susceptibility is elevated.

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Challenges Faced by Christians in Harare, Zimbabwe during the COVID-19 Lockdown

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Abstract

The COVID-19 disturbances have had a pervasive impact on virtually all facets of society including the Church. This study sought to explore the challenges faced by the Church in Harare, Zimbabwe, and coping strategies that they used to address those challenges. Specifically, the study sought to establish the social, psychological and financial challenges that the Church and its congregants faced. An analysis of the coping strategies that the Church employed was also done. The study took a qualitative approach, particularly employing an explorative design. Data was collected through semi-structured interviews conducted online through zoom with seventeen participants. The study established that the Church faced financial challenges during the COVID-19 lockdown. Congregants failed to physically meet and that led to breakdown of social ties and social rituals which are usually a source of psychosocial support. Congregants reported that they felt depressed because of non-attendance of Church services. Several coping strategies were adopted by the Church and these included the use of social media sites such as YouTube and WhatsApp to conduct Church services and maintain a sense of togetherness and belonging during the COVID-19 lockdown. This study recommends that mental health services such as counselling should be embedded in Church programming to help congregants to cope with disturbances such as COVID-19.

Keywords: Church, COVID-19, lockdown, psychological, social, economic

Introduction

The emergence of COVID-19 and the subsequent spread of the disease coupled with the measures put in place to contain its spread had far reaching implications for virtually all nations of the world. According to Chirisa et al. (2020), the lockdowns and the restrictions put in place to contain the spread of the virus affected all aspects of human life. Religion and the Christian Church in particular were seriously affected by the temporary ban on gatherings due to the inability of congregants to meet.

According to Li et al. (2020), the Chinese Centre for Diseases and Prevention (China CDC) announced on the 8th of January 2020 that the causative pathogen for the pneumonia was a novel coronavirus known as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). Corona virus disease 2019, COVID-19 as we know it

today, quickly spread in Wuhan and the rest of China at an alarming speed necessitating the World Health Organisation (WHO) to make a formal announcement to the world on 31 January 2020 that the disease constituted a public health emergency of international concern. According to the BBC (2020), by late March 2020 the global death toll had passed 36 200 with infections rising to more than 755 500. With no known cure or vaccine in sight, China and the rest of the world turned to strategies best known to mitigate the spread of the virus within populations. The suppression of social contact in the work place, schools, market places and churches, was the target of such measures which saw a lot of the countries prescribing social distancing measures as well as lockdowns. According to (BBC News, 2021) China was the first country to impose a lockdown initially on Wuhan and later to the rest of the country.

According to European Union Agency for Fundamental Rights (2020), EU member states introduced physical and social distancing measures to contain the spread of COVID-19. This included mandatory social distancing, different forms of quarantine, suspension of mass gatherings, stay at home requirements, closure of non-essential businesses and public spaces, prohibition of public movement without a permit amongst a host of other measures. According to Kaplan et al. (2020), Italy issued a countrywide lockdown on 10 March 2020 effectively ordering its 60 million citizens to stay at home, travel within the country was banned and individuals could only leave the house under specified circumstances such as solitary exercise close to home, and shopping for essentials. Leaving the house required one to print a certificate declaring their reason to leave the house and this would be inspected by the police. Those who violated lockdown conditions faced a jail term of up to three months or risked paying a fine. In Spain, *The Business Insider* (2020) reported that the government ordered a lockdown on the 14th of March which prescribed restriction of all non-essential travel except for medical reasons and getting food supplies. All forms of outdoor activities including church meetings, were prohibited and external borders to other European countries were closed.

According to *The Business Insider* (2020), France went into lockdown on 17 March 2020 which was expected to last until 11 May 2020. The lockdown measures in France prescribed that all public gatherings were prohibited, residents were to stay indoors except for grocery shopping and other essential tasks. Violations of the lockdown conditions attracted a fine or imprisonment for up to 6 months. It further reports that, the United Kingdom went into coronavirus lockdown on 23 March 2020. The

lockdown conditions restricted citizens from engaging in social gatherings of more than two people excluding those who lived together making it practically impossible for worshippers to congregate for their usual Saturday/Sunday services and other activities related to worship. The conditions also prohibited citizens from leaving their homes except for essential work, exercise, and purchasing of food and medicine.

According to *Africa News* (2020), as of 20 March 2020, all African countries, except Lesotho, reported cases of infections and death forcing some governments to adopt social distancing and lockdown measures to contain the spread of COVID-19. According to *The Guardian* (2020), South African president Cyril Ramaphosa announced the country's total lockdown commencing on the 26th of March for 21 days. In Zimbabwe, *News Day* (2020), reported that the country would go into total lockdown for 21 days with effect from the 31st March 2020. The lockdown measures in South Africa and Zimbabwe also prohibited church gatherings as these were not considered essential services. The government of Zimbabwe also temporarily suspended all Church gatherings as they felt that it would be difficult to maintain social distancing in the Church building. This study therefore sought to explore the specific challenges that the Christian Church is facing in the light of COVID-19 disturbances and how it is dealing with them.

Literature review

For many Christians, their identity and practices are enshrined in the words from the Bible in particular, Acts 2 verse 42, which states that the Christians from the first century church "*devoted themselves to the apostles' teachings and to the fellowship, to the breaking of bread and to prayer*", as well as another scripture which compels them to not give up meeting. Hebrews 10 verse 25, "*let us not give up meeting together as some are in the habit of doing, but let us encourage one another and all the more as you see the Day approaching*". The lockdown measures banned the meeting of religious groups taking away this identity of meeting, praying for each other and taking holy communion in remembrance of the Lord Jesus Christ. According to Whitaker (2020), the challenges for the Christian community during the COVID-19 pandemic is fostering community and supporting one another while keeping the physical distance. Christians are known for being available to care for the sick and dying as well as during difficult times. However, the current COVID-19 pandemic presents with different dynamics of caring and loving as staying close to others actually puts them and oneself at risk of contracting and spreading the virus. This presents a unique dilemma for most

Christians on how to love your neighbour without being close to them. A study conducted in China by Haleem et al. (2020) revealed that COVID-19 resulted in disruption of religious events and other cultural celebrations that required in-person gatherings. In a study in India, Roy et al. (2020) reported that 82% of the respondents had reduced social contact whilst 90% avoided meetings and gatherings. The same study also revealed that 72% were worried about themselves and their relatives and 12% had difficulty sleeping since the pandemic. Another study conducted by Ozili (2020) in Africa revealed that one of the consequences of the COVID-19 is the creation of social anxiety among families and households in the region. This is supported by another study conducted by Bhat et al. (2020) in Kashmir, India, which revealed that the majority of people reported that the lockdown had impacted negatively on their psychological wellbeing causing fear, anxiety and depression.

The lockdown in most countries coincided with Easter, which marks the busiest time on the Christian calendar as Christians worldwide partake in centuries old traditions to mark the death and resurrection of Jesus Christ. According to the Hull (2020), for most orthodox Christians, Easter is a time of reflection and mourning accompanied with ceremonies steeped in symbolism and tradition. In order to adapt to the lockdown measures, most churches across the world turned to online streaming of church services in place of the traditional in-person services. According to Parke (2020), over the Easter weekend, many congregants resorted to follow church services online in their homes in place of the traditional services they were accustomed to over the years. Churches, synagogues and temples conducted virtual services. Although these measures offer an alternative to the usual worship, Yee (2020) points out that the social distancing measures leave the faithful feeling distant from God as they cannot partake in holy communion as this can pose a threat to their own physical wellbeing. According to Diseko (2020), in an interview with the BBC, a Catholic parishioner from the UK confessed that their inability to take communion and make the sign of peace left them feeling as if a part of Mass had been taken away from them.

According to Klett (2020), while congregants in some parts of the world still had something to hold onto such as the virtual services, it was not the case in India and China as the pandemic presented more challenges to the already persecuted Christians in these countries. Klett (2020) also reports that Christian pastors in India are at risk of starvation as they are not able to meet with their congregants who are their source of support for food and material needs. Due to their Christian faith, they

also report that they are not eligible for government grants being given as COVID-19 relief support to those in need as pressure for them to turn to Hinduism. In China, Parke (2020) states that the government, which upholds atheism policies, has taken advantage of the lockdown to carry out antireligious campaigns which saw demolition of church buildings, removal of Christian crucifixes in Yixing and forbidding preachers to engage in online preaching making it virtually impossible for Christians to practise their faith.

Christians, dating back to Biblical times have often fought for their right to congregate viewing any form of infringement of this right as persecution and the work of the devil. It is not surprising that even during this current pandemic, some congregants have resisted the lockdown measures and have been defiant on holding in-person services in violation of the lockdown measures. According to *The National Post* (2020), in Louisiana, USA, the pastor of Life Tabernacle Church gave a live TV interview where he stated that his church was defying the lockdown rules because the commandment of God was to spread the gospel. The lockdown is viewed as a threat to religious freedom and constitutional rights. Hull (2020) also reported that the Greek Orthodox Church continued to serve communion claiming that one could not contract illness from holy communion as it is the bread and wine which represents the body and blood of Christ which was shed to give life to the believers contrary to the scientists' theory on contagion of the virus.

Although controversial, tithing has certainly been at the core of multiple faith systems as the bible itself encourages giving. The bible in 2 Corinthians 9: 7 states that, "*So let each one give as he purposes in his heart, not grudgingly or of necessity, for God loves a cheerful giver*". Mathe (2020) reports that a lot of churches in Pretoria, South Africa, have been negatively affected by the lockdown as there have been significant decreases in the offerings made to the church. This has resulted in the church experiencing financial difficulties to the extent that they are failing to pay salaries to the pastors and those that do get paid are not getting 100% of their salaries. Mathe (2020) also confirmed that there are some churches that are helping people that have been affected by COVID-19 by giving them two meals a day as well as food parcels but due to the financial constraints that they are experiencing, it is likely that they would not be able to continue doing so resulting in untold suffering for the beneficiaries. Although some churches have encouraged their congregants to give their offerings through bank transfers, many people living in the townships face the challenge of technology as

many people do not have banking applications, some do not have bank accounts and many could not go to the bank to deposit money into the church account (Mathe, 2020).

According to Tandwa (2020), the South African Council of Churches (SACC) asked the Government for financial relief for some churches that have been terribly affected by the lockdown. Although most churches in South Africa have reported financial difficulties as their biggest challenge, Oosthuizen (2020) noted that, for others, the biggest challenge was the fact that the congregants could not be together. Most churches have cell group meetings on a weekly basis which help members support each other on an individual as well as spiritual level. Due to the lockdown, these meetings have not been able to happen leaving a lot of members struggling to cope (Oosthuizen, 2020).

Despite the many challenges that churches have been facing, some are finding ways to adopt to the new normal. Shaw (2020) reports that some churches in India have moved to broadcasting their services online and some small churches that would have a congregation of 100 found that they would have more than 700 viewers online, from India and beyond. Since physical attendance is no longer a prerequisite, many churches have noted an increase in mid-week ministries. Churches in India have also managed to move from the traditional written materials to audio, visual and digital versions (Shaw, 2020).

Many churches in England have resorted to online services. The Church of England announced that the clergy could begin streaming and recording services from their churches instead of from their homes as the country begins to ease down on the lockdown restrictions (Sherwood, 2020). According to Bashir and Farley (2020), a recent study by ComRes has revealed that almost one in four British adults have watched or listened to a religious service since the lockdown began. Academics from British Religion estimate that typically just 6% of adults regularly attend a religious service (Bashir & Farley, 2020).

The Scottish Episcopal Church has reported that their members continue to fellowship through telephone contacts, personal prayer at home with their families, posting of weekly reflections, and online sharing of worship (The Scottish Episcopal Church, 2020). A survey carried out by Christian charity Agape UK revealed that 90% of those

surveyed reported that their relationship with God helped them cope with the pandemic. Prayer and faith have been found to be very important elements in the relationship (Bentley, 2020).

In South Africa, the SACC has also called on churches to suspend all capital expenditure activities and to consider other cost-saving measures, with many faith-based leaders forfeiting additional income as well as travel allowances (Tandwa, 2020). It is also reported that some churches were surviving due to the generosity of some South Africans. Tandwa (2020) confirmed that there were instances where the clergy contributed from their earnings. Many churches have also resorted to having online services where members who wish to attend the service tune in to the website at the same time (Oosthuizen, 2020).

Christians in different circles all over the world undoubtedly have to wrestle with the question of whether COVID-19 is in any way a signal of the end of times which are referred to in the Bible or the fulfilment of prophecy on the coming of incurable diseases. This study sought to explore the challenges experienced by Christians in Harare during the COVID-19 lockdown.

Research questions

1) What are the financial challenges that churches and their congregants faced due to the lockdown?
2) Are there any social problems that arose within churches due to the COVID-19 lockdown?
3) Are there any resultant psychological challenges amongst congregants brought upon by the COVID-19 lockdown?
4) What coping strategies did churches and congregants put in place to adjust to COVID-19 disturbances?

Methodology

Research approach

The study made use of the qualitative research approach. Qualitative research is inductive in nature, and the researchers generally explored meanings and insights in a given situation (Levitt et al., 2017). Punch (2013) also adds that it is a type of social science research that collects and works with data that is non-numerical which

ultimately seeks to interpret meaning from these data which in turn helps us to understand social life through studying targeted populations or places. This approach is relevant to the current study as the researchers tried to explore the challenges faced by churches in Harare during the lockdown as this would allow for rich and detailed information to be collected about the affected populations. Creswell (2009) also describes it as an effective model that occurs in a natural setting and enables the researcher to develop a level of detail from high involvement in the actual experiences.

Research design

The research design adopted for this study is exploratory research. According to Maxwell and Mittapali (2008), exploratory research implies that the research is intended to explain rather than simply describe the phenomena being studied. The researchers adopted this research design to explain rather than simply describe the challenges congregants in Zimbabwe faced during the COVID-19 pandemic and lockdown.

Population and sampling

The population for this study included all Christian congregants in Harare. Participants were selected through voluntary sampling. Voluntary sampling was suitable for this study as interviews were conducted through online means due to the COVID-19 restrictions. The characteristics of the sample are shown in Table 1.

Table 1: Respondents' demographic data

Variables	Frequency
Age (in yrs)	
16-25	2
36-45	10
46-55	1
56-65	1
66 and above	1
Unspecified	2
Gender	
Females	12
Males	5
Church Classification	
Mainline	7
Pentecostal	6
Catholic	1
Unspecified	3

Position Held in Church	
Ordinary Congregant	6
Pastor	4
Elder	2
Church Leader	4
Women's Fellowship Leader	1

The majority (ten), of the interviewed participants were aged between 36-45 years. There were more females than males who took part in the study. The majority of responses were obtained from congregants from the mainline churches.

Research instrument

The researchers made use of zoom online platforms to conduct semi-structured interviews which allowed them to gain detailed and in-depth information through probing and getting clarification on answers given. Semi-structured interviews also provide an opportunity for the interviewers to learn answers to questions and the reasons behind the answers as well as allowing respondents time to open up about sensitive issues. It also allowed easiness in obtaining information from participants who could neither read nor write and questions were easily translated to vernacular languages in cases where participants did not understand English.

Data presentation and analysis procedures

Participants' demographic data was presented in a table. Data from interviews was presented using narratives and thematic analysis used to analyse the data.

Results

The discussion of results is based on the research questions, which are used as subheadings.

Financial challenges

The study revealed that the majority of the congregants believed that the lockdown had negatively affected the finances of their churches as well as their own. This is revealed by a response from a congregant who stated that:

> There has been very little support from the congregants and money has not been readily available during the lockdown era. This has caused a strain on the church's financial standing.

One church Elder also had this to say:

> We are a self-sufficient church hence loss of income for congregants affects the church's financial standing negatively.

These findings were similar to those by Mathe (2020) in Pretoria, South Africa, who noted that the lockdown had resulted in significant decreases in the offerings made causing the church to experience financial difficulties to the extent that they were failing to pay salaries to pastors. Klett (2020) also found that in India, Christian pastors were at risk of starvation as they were not able to meet with their congregants who were their source of support for food and material needs. As a result of the lockdown, some congregants lost their jobs and others were faced with a significant cut in their earnings as evidenced in the following responses:

> …. It has because a lot of people lost their jobs and those who were doing their own things were closed down

> Because a lot of people have not been going to work, people have not been able to earn salaries. We have a lot of members in the small enterprises industries who could not make any production during this lockdown. We also have many of the members living from hand to mouth, by selling fruits, vegetables, corn snacks, who have had no way of eking out a living.

This was a comment made by a leader of a women's fellowship group which clearly indicates the financial challenges that were being faced by the congregants and once their incomes were affected there was really very little, if anything, left to give to the church. This point was reiterated by a pastor who simply said, '…*If congregants can't earn, they cannot give*'.

In this study, ten of the respondents revealed that, although the Church has tried to make an effort to take services online, the prohibitive cost of data made it very difficult for worshippers to access online church services. The congregants are not only struggling to purchase data for themselves but also for the church leaders who have to carry out the church services. This is evidenced in a response from one participant who said:

> Data for media communications has generally been expensive. So, because most communication now is via media, individual, and general church costs for communication have gone up significantly. The monthly Internet/Wi-Fi costs have gone up.

One congregant said, '*Data is expensive, and I can't afford it*" This has had a negative impact on the number of people able to attend online services as confirmed by one church leader who said, '… *the number of people we are able to reach out to has gone down because we have to do things online*'. These findings were however contrary to findings

by Shaw (2020) in India where most small churches have had a significant increase to the number of people attending online services. The findings were also contrary to Bashir and Farley (2020), in England where there was also an increase in the number of people attending online services. The differences could possibly be due to the availability of affordable and reliable Wi-Fi and data in India and England.

Social challenges

The results also revealed that the majority of the participants reported experiencing many social challenges due to the lockdown. Due to the lack of physical contact with other congregants, some failed to cope with one participant saying that:

> Just before lockdown, we had a single mom who lost her mother. It has not been possible to physically be with her, to give her a hug, and meet her emotional needs in the absence of physical connection.

One important function of the church is to be there for its members in difficult times but, due to the lockdown, this has not been possible and being there for congregants virtually is not very effective since not everyone has access to the Internet as reiterated by one pastor, '*Not everyone has access to online services so it has been very difficult*'.

Pastors in many churches offer counselling services to their congregants and the lockdown has made it very difficult as virtual counselling has been out of reach for many people. Many worried about the wellbeing of their fellow congregants but felt that there was nothing they could do to help as some have no way of being reached as explained by one congregant:

> …. have not been in much contact with members who do not have phones or are not on social media platforms.' Another had this to say, '…limited and relationships are tested as not all are able to call, WhatsApp etc. One has to put an extra effort to keep in touch.

A women's fellowship leader also added:

> We would usually meet very often across family group members, share the word, and then eat dinner together in our homes. This had to come to a sudden stop during this pandemic. The usual worship meetings also had to be suddenly stopped, affecting our social interactions as members of the church.

These findings were very similar to Roy et al. (2020) in India, who reported that 82% of the respondents had reduced social contact whilst 90% avoided meetings and gatherings and that 72% were worried about themselves and their relatives.

Psychological challenges

The results of the study revealed that ten of the participants felt that their mental health has been negatively affected by not being able to go to church and worship with others as shown from the response given by one congregant:

> Personally, I am a people person. Relationships mean a lot to me. I thrive when I am in the company of friends and family. I shrivel in the absence of warm fellowship. I have also been battling with depression, and have been on medication now. So, the absence of meeting together has not been encouraging.

The study revealed that seven of the participants reported that they were living in constant fear and were anxious of how else the pandemic was going to disrupt their livelihoods. Others confirmed that they feared losing their loved ones as well as their lives to the virus:

> …. I have had normal fears of what if I am infected. Or my husband, or one of my children is infected. What if I, or they die? Since the lockdown, I have had a number of flu attacks. I have been concerned that it might be the COVID-19 infection.

Another participant was quoted saying:

> At first it was not easy because of fear, anxiety…

There was also a sense of uncertainty as to what the future is going to look like as shown by the response from one of the participants quoted saying:

> I kept wondering what God was planning to do in the whole situation and it is stressful.

Three participants confirmed that, although they were afraid for their lives, they were also scared that their faith might be affected by the inability to go to church and fellowship with others:

> … grow further apart from God than we were before the lockdown because we will be lacking that weekly sort of revival and further strengthening of our faith. And as much as we can do online services the feeling is not nearly the same as physically worshiping together.

Another participant was quoted saying:

> Weak Christians might not cope, especially without the usual church services.

It was very apparent from the responses that the lockdown certainly had a negative impact on the psychological wellbeing of the participants with anxiety, depression, stress and fear being dominant. Similar findings were recorded by Bhat et al. (2020) in Kashmir, India, where the majority of people reported that the lockdown had

impacted negatively on their psychological wellbeing, causing fear, anxiety and depression. In Africa, Ozili (2020) reported that COVID-19 has created a lot of social anxiety among families and households in the region.

Coping strategies

Despite the many challenges that churches and their congregants faced during the COVID-19 lockdown, they certainly did their best to try and cope with the new normal. Results of the study revealed that ten of the participants continued to have devotions and prayer sessions with their family members, '*Having smaller services as a family and praying as a family'.* Another participant had this to say, '*Devotional with family, prayer partner*…' These results indicate that, although the participants have not been able to go to Church and fellowship with other congregants, this did not stop them from fellowshipping with their family members thereby assisting them to keep their faith strong. These findings were similar to those reported by The Scottish Episcopal Church (2020) in Scotland where their members continued to fellowship at home with their families in the absence of physical interaction with other church members.

For those who had access to the Internet, results showed that nine of the participants were able to attend online services as well as sharing devotional audios and books. One respondent was quoted as saying, '*We have online services via Zoom or YouTube'.* Another respondent expresses that they were '… *actively participating in prayer groups online*…'

For those respondents whose churches did not offer online services, participants would view services of other churches online. One congregant was reported as saying, '*Local services on audio and YouTube from sister churches'* as well as '*Via YouTube and AMI TV'.* These findings were similar to those reported by Sherwood (2020) in England; Shaw (2020) in India; The Scottish Episcopal Church (2020) in Scotland; and Oosthuizen (2020) in South Africa, who all reported that a lot of churches had resorted to reaching out to their congregants using different online platforms. Some churches in India have also reported a significant increase in the number of followers from India and beyond. Results from the study showed that a majority of the participants were able to cope with the new normal, all thanks to their strong faith and prayer. Their

belief that God is watching over them and has not forsaken them helps them in everything that they do. One participant was quoted saying:

> By His Grace I am able to keep strong mentally and I believe that God will see me and my loved ones through this pandemic… I have seen God answering prayers for protection from infection by the COVID-19 virus, for myself, my family, our siblings and their families, and in our family of believers.

Another respondent simply said:

> I am praying in all things without ceasing!!

A church leader also had this to say:

> Currently am praying a lot and I believe that God will see us through.

The faith and conviction of the respondents has certainly helped them cope with the difficulties of the lockdown, they believe that God is in control and that this shall all come to pass. Similar findings were reported by Bentley (2020) in the UK where a survey revealed that 90% of those surveyed reported that their relationship with God helped them cope with the pandemic where prayer and faith have been found to be very important elements in the relationship.

Conclusions

The nature and operations of the Church have been shaped in unintended ways by the COVID-19 disturbances. The COVID-19 lockdown meant a reduction in Church offerings and tithes which people used to give physically at Church. The temporary ban on Church gatherings therefore resulted in a drop in the Church's income. The Church was therefore forced to limit or stop some services that it used to offer due to shortage of funds. The Church naturally provides a platform for human interaction and the ban on gatherings meant most Christians were as such deprived of opportunities to fellowship and interact which are sources of psychosocial support. The forced non-attendance of Church services begot a number of psychological ills or at least symptoms associated with psychological ills such as depression, anxiety and stress. These negative developments caused by the cancellation of physical services indicate that the Church is more than a place for spiritual growth but rather provides psychosocial support as well. Social media sites such as YouTube have proved useful in the COVID-19 era in trying to ensure congregants maintain a semblance of fellowship. Faith and prayer are also powerful weapons that congregants use

whenever a crisis hits and these have been used effectively during the COVID-19 disturbances.

Recommendations

- Churches to equip themselves to be able to support their congregants with their emotional wellbeing following the coronavirus crisis.
- Churches to make use of radio and television broadcast as well as newspapers to be able to reach out to all their congregants.
- Mental health services should be embedded in Church programming to support congregants in these COVID-19 disturbances and beyond
- Future research should explore the nature of Church services beyond the COVID-19 era.

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Determinants of Self-Reported Adherence to COVID-19 Preventive Measures: A Survey Conducted in Mutare and Chiredzi

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Abstract

A barrier analysis study was conducted in Mutare and Chiredzi towns of Zimbabwe to guide the development of a risk communication strategy embedded within a multi-purpose cash transfer project. The aim of the barrier analysis was to identify factors that influence the adoption of two preventive practices, that is, the correct and consistent wearing of face masks as well as physical distancing in public. The study was based on the standard barrier analysis methodology as detailed by Bonnie Kittle. Structured interviews were administered to 180 respondents who were purposively sampled in the two towns, 90 of whom were doers and 90 were non-doers of the two practices. The study identified four determinants of the correct wearing of masks, namely perceived self-efficacy, perceived access, cues to action and perceived action efficacy. The study also identified six determinants for physical distancing, namely perceived self-efficacy, access, perceived action efficacy, perceived divine will, cues to action and perceived social norms. The findings of this study highlight the need to place behavioural science at the core of the COVID-19 response as this allows for context specific risk communication.

Keywords: Coronavirus, COVID-19, determinants, public health, behaviour, Zimbabwe

Introduction

The first known case of COVID-19 in Zimbabwe was reported in March 2020, three months after the World Health Organisation had declared the disease a global pandemic. The country has since experienced over 38000 cases as at 20 May 2021 with close to 1600 of these cases resulting in death. The COVID-19 pandemic has severely disrupted lives, with the country being in a state of emergency since the end of March 2020. The country has initiated a response plan that includes the enforcement of globally recommended preventive measures such as physical and social distancing, use of masks and sanitisers as well as limiting non-essential business during certain periods. The preventive measures have been given the force of law as government, like in many other countries, attempts to flatten the curve and avoid placing pressure on health facilities. However, adherence to these measures requires the voluntary

cooperation of citizens, and Zimbabwe has faced challenges in getting citizens to cooperate.

The health belief model may help explain citizens willingness or unwillingness to voluntarily practice recommended preventive behaviours. The model identifies several determinants of behaviour which include perceptions related to risk, severity of illness, action efficacy and the opinions of others, amongst others. The model identifies a total of 12 constructs that interact to affect a person's final behaviour (Rosenstock, 1974). Three previous epidemics since the turn of the century (SARS of 2003, H1N1 of 2009, EVD of 2018) were accompanied by similar recommendations for prevention and literature from that time identified a few factors that affect compliance with public health recommendations (Wright, Steptoe, & Fancourt, 2021).

Wright *et al.* (2021) summarise the factors as confidence in public institutions, social experiences, mental health and wellbeing as well as knowledge of the virus. These factors collectively affect the motivation, capabilities and opportunities to comply with public health recommendations (Wright, Steptoe, & Fancourt, 2021). Nivette *et al.* (2021) identify age and demographic factors as key determinants of whether one follows or disregards recommendations of COVID-19 prevention. However, Stein *et al.* (2021) reported that those who relied on social media for information on COVID-19 tended to disregard evidence-based recommendations for the prevention of COVID-19, largely because of the abundance of conspiracy theories and general misinformation on social media.

Compliance to preventive measures has proven difficult even for trained health workers who are at the core of the response. It has been reported that 13% of health workers in Pakistan remove their masks while talking to patients (Kumar, Katto & Siddiqui, 2020). The report further states that over 20% of health professionals reuse masks while over 55% incorrectly disposed of their masks in the workplace. Adherence to COVID-19 preventive measures is a challenge for many and it is important to identify what can be done to improve adherence. This is particularly important for Zimbabwe where household sizes are generally large and housed in crowded dwellings which are risk factors for transmissibility of the virus. Additional risk factors were the poor state of the health services including the lack of intensive care space as well as a high prevalence of co-morbidities known to predispose sufferers to a more severe form of the disease (Mackworth-Young et al., 2020).

Organisations responding to the COVID-19 pandemic need to develop better understanding of factors affecting the behaviour of their beneficiaries to better design interventions targeting them.

This study was conducted as part of a baseline assessment to inform an emergency response project being implemented by Nutrition Action Zimbabwe in Mutare and Chiredzi. Nutrition Action Zimbabwe was implementing an emergency food insecurity response project in partnership with Action Against Hunger and Africa Ahead targeting the most vulnerable households in Mutare and Chiredzi. The project was implemented with funding from the European Union and had the objective of preventing further deterioration of the health situation into crisis. The project recognised the additional risk posed by COVID-19 to the livelihood and health of beneficiaries. The aim of this study was to understand the barriers and facilitators of compliance and non-compliance to public health recommendations on COVID-19 prevention. This study would inform the development of a behaviour change communication strategy targeting project beneficiaries. We conducted a cross-sectional study in Mutare and Chiredzi urban districts targeting the correct wearing of a mask in public spaces as well as physical distancing while in public spaces.

Specific objectives

i) To identify the determinants of self-reported correct and consistent wearing of face masks in public spaces
ii) To identify the determinants of self-reported physical distancing in public spaces

Aim of the study

The aim of this barrier analysis study was to understands the barriers and facilitators of COVID-19 preventive practices, namely correct and consistent wearing of face masks and physical distancing while in public amongst the residents of Mutare and Chiredzi towns, Zimbabwe.

Setting

The study sites were two low-income townships, Tshovani in Chiredzi and Dangamvura in Mutare. These townships were the areas of operation of a multi-sector cash transfer project targeting households affected by the economic decline and resultant food insecurity. Like most of Zimbabwe, these townships have been

burdened by the restrictions imposed as a response to the COVID-19 pandemic as well as the effects of economic decline in the country. Data for the study was collected over a period of 5 days in November 2020.

Methodology and design

This was a cross-sectional study using the barrier analysis design detailed in Kittle (2013) to provide a detailed understanding of barriers to recommended preventive practices amongst households living in high density areas of Mutare and Chiredzi. The approach was chosen to inform the design a risk communication strategy for beneficiaries of a cash transfer project being implemented in the two suburbs. The data were collected through the standard barrier analysis questionnaires which investigated 12 constructs as listed in Table 1 (Kittle, 2013).

Recruitment and sample

A purposive sampling method was employed to recruit study respondents. Respondents included a randomly selected member of a selected household aged 13 and above. A sample of 90 respondents (45 'doers', that is, those who practice the behaviour; and 45 'non-doers', that is, those who do not) were selected for each behaviour. For the two behaviours, a total of 180 respondents were sampled. Respondents were first screened and classified as 'doers' or 'non-doers', after which they were asked questions according to their classification to identify which of the 12 specified determinants of behaviour change acted as barriers to the particular behaviour among 'non-doers' and which facilitated its adoption among 'doers'. Data from closed-ended questions were collected using paper questionnaires.

Data collection method

Prior to data collection 12 enumerators were trained on the data collection tool and the barrier analysis methodology over one day. The measurement tool was pretested during training to check for consistency in question administration, interpretation and understanding as well as the ability of the question to elicit required information. Pre-testing was conducted on respondents meeting the inclusion criteria but living in a suburb that had not been sampled for the study. Structured individual interviews were ultimately administered to 90 respondents for each of the two behaviours.

Data analysis

After data collection, the data was handed over to four data entry clerks who worked with a supervisor to group similar responses together and tally them for doers and non-doers. These data were entered into a barrier analysis tabulation sheet (Microsoft Excel), available online at https://www.behaviourchange.net/ document/184-tabulation-sheet-for-analysing-barrier-analysis-results; and estimated risk ratios and researchers generated odds ratios for each response. Results were considered significant if the difference between the frequency of a 'doers' response and a 'non doers' response was equal to or greater than 15 percentage points. This was automatically calculated through the barrier analysis tabulation Excel sheet.

Ethical consideration

The study was conducted under guidance of the contract entered into with the government of Zimbabwe. The researchers sought approval from the City of Mutare and Chiredzi Town Council departments of health to conduct the study under the coverage of the existing memorandum of understanding. Verbal informed consent and permission was sought before researcher engaged the participants. For respondents under the age of 18, assent was sought along with consent from the parent. Participants were also assured of confidentiality and that there was no harm in participating in the study. The researcher clearly explained the purpose of the study to the participants and explained that participants were allowed to withdraw from the interview if they so wished. Researchers also explained to participants that they would not get any reward for participants nor any disincentive for opting out. Participants were given codes instead of names for the sake of anonymity. The researcher also ensured that there was no harm to the participants throughout the study.

Results

Correct and consistent wearing of a face mask in public

The study identified four determinants of the correct wearing of masks, namely perceived self-efficacy, perceived access, cues to action and perceived action efficacy. Doers were 5.09 times to report that they had sufficient skills, knowledge, and resources to practice this behaviour. Doers were also 2.1 times more likely to report that fear of contracting COVID-19 made it easier to wear a mask correctly and consistently. Doers were 7.2 times more likely to report that it was somewhat difficult to get what was required to practise the behaviour. Doers were 3.37 times more likely to report that it was not difficult to remember to correctly and consistently wearing

masks or covering faces. Doers were 5.2 times more likely to report that wearing masks correctly and consistently would not prevent them and their family from contracting COVID-19.

Physical distancing in public spaces

The analysis uncovered six determinants for this behaviour, namely perceived self-efficacy, access, perceived action efficacy, perceived divine will, cues to action and perceived social norms.

Doers were 7.25 times more likely to report that they had the skills, knowledge, and resources to practise this behaviour. Doers were 7.25 times more likely to report that most people approved of the behaviour. Amongst those who approved were family members and church mates. Doers were 3.03 times more likely to report that family members approved of the behaviour and 2.48 times more likely to report that church mates approved of the behaviour. Doers were 2.67 times more likely to report that fellow community members disapproved of the behaviour particularly at communal water points and shops. Doers were 4.05 times to report that it was not difficult to get what was required to practise the behaviour. Doers were 6.33 times more likely to report that it was not difficult to remember to practise the behaviour. Doers were 6.22 times more likely to report that God approved of the behaviour. Doers were 12 times more likely to report that most people approve of purchasing animal source foods and legumes for household consumption. Doers were 3.23 times more likely to name friends and relatives as members of the community that approved of this behaviour.

Table 1: Summary of statistically significant determinants

Determinant	Masking Up	Physical Distancing
Self-Efficacy		
Social norms		
Positive Consequences		
Negative Consequences		
Access		
Cues to Action		
Susceptibility		
Severity		
Action Efficacy		
Divine will		
Policy		
Culture		

Discussion

The results show the big influence played by individual perceptions on the uptake of public health recommendations to prevent the spread of COVID-19. Our findings on the determinants of preventive practices on COVID-19 complement the work of several authors including Michie *et al.* (2020) and Bavel *et al.* (2020) who highlight the need to place behavioural science at the core of the response. Findings from work done during previous epidemics also highlight the importance of factoring in behavioural science in risk communication (Wright, Steptoe, & Fancourt, 2021). Understanding the determinants of public behaviour is crucial to implementing a context specific response to COVID-19 for the local health authorities and respective partners (Bavel et al., 2020; Michie, Rubin & Amlot, 2020; Seale et al., 2020).

Correct and consistent wearing of face masks in public

The pandemic has affected the rich and the poor, but recommendations made to the public have not factored in ability to procure enabling material such as masks. This study found that lack of resources is one of the major barriers to use of face masks as shown by. This finding was also reported by Mersha (2021) who reported that shortage of PPE and lack of cleaning solutions (hand sanitisers) are major barriers to adherence to preventive measures even to health care professionals. The odds of reporting sufficient skills, knowledge, and resources to practise the recommend behaviour was 5.09 time over the non-doers. Zohra *et al.* (2020) reported that, after the first case had been reported in Nigeria, the retail price of face masks increased by approximately 600% leading to a resultant decrease in their use by the public (Zohra, et al., 2020). Doers were 2.1 times more likely to report fear of contracting the diseases as a motivator for them to adhere to correct and consistent use of masks. This is corroborated by a study conducted by Lang *et al.* (2020) in Canada. This may present an opportunity to use fear as a tool for behaviour change as proposed by practitioners of the extended parallel processing model (EPPM) of behaviour change (Lang, 2021; Popova, 2011; Wright, Steptoe & Fancourt, 2021).

Doers were 5.2 times more likely to report that wearing masks correctly and consistently would not prevent them and their family from contracting COVID-19 contrary to the belief that if the public believed the measure would prevent them and their families from contracting the diseases according to (Lang, 2021). This finding may be evidence that compliance is related to legal and economic disincentives introduced by government, but this poses threats to long term sustainability of such

practices (Shelus et al., 2020). The findings may also be explained by Van Bavel *et al.* (2020) who showed that public trust in institutions is a key determinant of behaviour. In this case, the belief that face masks are not effective at preventing infection may be an indicator that the public do not trust the source of that information. Complying individuals are reportedly more likely to seek out information and as a result may encounter contradictory information. This could explain why doers reported that they found it easy to remember to practise the behaviour. This may also explain why doers have little faith in the face masks as the internet is swamped with contradictory information (Wright, Steptoe, & Fancourt, 2021).

Physical distancing in public

Studies elsewhere have indicated that lack of information and knowledge in infection control measures is the major contributor to the spread of COVID-19 (Mersha, 2021). The findings of this study agree with these findings as doers were 7.25 times more likely to report that they have sufficient knowledge skills and resources required to practice the behaviour. Doers indicated disapproval by community members particularly at communal water point and markets where they would be required to queue and scramble for resources. They reported that it would be difficult to maintain the social distance especially at farmers vegetable markets. This is also in agreement with studies in other settings that reported that it is difficult for people in urban areas to practise social distancing (Lang, 2021; Mackworth-Young et al., 2020).

The study found that doers were 2.25 times more likely to report that people around them approved of their behaviour which made it easy for them to practise the behaviour. This is an indication that social influence plays a role as a major contributor to behaviour change. In some settings, use of social influencers helps in adoption of the recommended behaviour but individual persuasion is also needed through access to the right and correct information. In some studies, it is believed that in this era social media is playing a big role in adoption of public health behaviour surrounding prevention of COVID-19 (Doogan, Buntine, Linger & Brunt , 2020). Lang (2021) highlighted that that information and ideas that one is exposed to are likely to shape one's behaviour positively or negatively. For example, acceptance of the COVID-19 vaccine has been greatly influenced by social media information.

As the country moves forward with the response, there is a need to lean on proven behavioural science approaches to ensure the pandemic is halted. This is particularly important in the roll out of the vaccine which has already commenced.

Conclusion and recommendations

The study identified four determinants of the correct wearing of masks, namely perceived self-efficacy, perceived access, cues to action and perceived action efficacy. The study also identified six determinants for physical distancing, namely perceived self-efficacy, access, perceived action efficacy, perceived divine will, cues to action and perceived social norms. The study reinforces the need to place behavioural science at the core of the COVID-19 response given the need to sustained change in everyday practices.

Future research may research determinants of key practices amongst different categories such the young, the old and those at higher risk owing to the existence of co-morbidities.

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Subjective Psychosocial Experiences of COVID-19: Essential Service Provider Employees in Zimbabwe

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Abstract

COVID-19 pandemic brought huge changes in people's lives in the world and Zimbabwe was not spared. Research on COVID-19 from first world countries reveals that control measures adapted to curb the spread of the SARS-Cov 2 virus were successful in limiting its spread but had other negative consequences. The aim of this study is to explore psychological impact of the pandemic on Zimbabweans working in essential services as defined in Zimbabwe's regulations, excluding health workers. A phenomenological approach to research was used using the interpretive or constructivist paradigm to enable examination participants' construction of meaning out of their interactions. Sampling method was a mix of purposive and convenient sampling. Thematic analysis was utilised for data analysis. Emergent themes include effects on social relationships, experiencing COVID-19 as an employee, disruption of normal life routines, effects on social relationships, financial worries and fears associated with the vaccine. Findings indicate the pandemic added new stressors to those already present in the ailing economy and Zimbabweans were inadequately prepared for the pandemic and there was a need for collaboration among the private and public sector to address concerns affecting employees in the essential service sector of clearing agents. It can be concluded that Zimbabweans struggled and still struggles to come to terms with the perpetual effects of COVID-19. A multiple sectorial approach might provide mechanisms to deal with the new set of stressors associated with COVID-19.

Keywords: Subjective, psychosocial experiences, COVID-19, essential service, vaccine

Introduction

COVID-19 is a health crisis that resulted in many challenges including high mortality, psychological and economic problems (Cosic, Popovic, Sarlija & Kesedzic, 2020; Fardin, 2020; Pavari, 2020). Since its emergence, COVID-19 proved to be a threat to mental health (Li, Wang, Xue, Zhao & Zhu, 2020; Pavari, 2020) and the full impact of the pandemic has not yet been determined (Fardin, 2020). Studies on previous pandemics postulated psychological effects associated with emergencies such as depression, anxiety and excessive fear (Fardin, 2020; Li et al., 2020; Liang et al., 2020; Murewanhema et al., 2020; Wang et al., 2019). Negative psychological effects were

found to be associated with the COVID-19 pandemic, including post-traumatic stress disorders, depression, anxiety (British Columbia Ministry of Health, 2020; Fardin, 2020; Wang et al., 2019), indignation (Li et al., 2020) and suicidality (Afolabi, 2020; Cosic et al., 2020). Most articles focused on the impact of the COVID-19 pandemic on frontline workers in the medical field since they were the worst affected (British Columbia Ministry of Health, 2020; Cassim, 2020; Cosic et al., 2020; Fardin, 2020). This leaves a literature gap on experiences of other populations. The aim of this study is to understand experiences of Zimbabweans in the essential services sector except for health workers of the COVID-19 pandemic and to establish the psychological effects the pandemic has had on them. Essential services for the purpose of this article shall mean clearing agents who facilitate the movement of goods into and outside of Zimbabwe in terms of the COVID-19 regulations (Public Health COVID-19 Prevention, Containment and Treatment National Lockdown Order, 2020).

Mental health is a critical system that works in conjunction with other human mechanisms to determine physical health (Umberson & Karaz Montez, 2010). Mental health can also be defined as a state of being for individuals which includes the biological, social and psychological factors which aid to one's functioning in the environment or their mental state (Manwell et al., 2015). Furtherrmore, mental health is the capability to improve lives and the capacity to think, feel and behave in ways that improve abilities to appreciate life and face the challenges (Public Health Agency of Canada (PHAC), 2006; World Health Organisation, 2004). These descriptions of mental health postulate a need for interaction between people and the environment. Health is also not the mere absence of sickness or injury but is a state of mental health, physical health and social wellness varying on a continuum (Berezina et al., 2020; Sarafino & Smith, 2011). One cannot therefore discuss issues of mental health separate from issues on social wellness and physical health. These three components interact and must balance so that individuals function as active participants of their health status (Sarafino & Smith, 2011). This research paper therefore studies aspects linked to the COVID-19 pandemic that may affect psychological health. These include work related developments, financial effects and interpersonal relationships.

Zimbabwe has been facing economic turmoil for the past two decades (Kajawu, Chiweshe, & Mapara, 2019. The pandemic added to this situation through price hikes of basic goods (CARE International, 2020; Pavari, 2020; Zimstat, 2020). Chronic shortages of psychological service providers that were already in existence (Mangezi

& Chibanda, 2010) were exacerbated by the pandemic due to its heightened demand for psycho-social support for individuals (Pavari, 2020). This shortage however was found not to be unique to Zimbabwe alone but a worldwide problem (Cosic et al., 2020; Wang et al., 2019). Fardin (2020) claims the psychological impact of COVID-19 pandemic on societies is irreversible, for instance, fears of the disease, anxiety of losing loved ones as well as depression, making it imperative to find measures that mitigate the negative impact.

Pavari (2020) indicates the socio-economic damage of the pandemic will take long to mend. Clin et al. (2020) clarify that severe adverse emotions resulting from schools and businesses closures result in psychological harm. Clin et al. also hint that literature revealed that the pandemic caused numerous business closures and bankruptcy causing massive layoffs with United States recording over three million layoffs as of March 2020. In addition to the reactivity to daily hassles in individuals (Sarafino & Smith, 2011), COVID-19 emergency resulted in psychological damages including uncertainty and hopelessness (British Columbia Ministry of Health, 2020; Cosic et al., 2020; Pavari, 2020). Lives of most Zimbabweans came to a halt and the struggle to fend for daily needs like water and food worsened (Muorwel & Vincent, 2020). Matsungo and Chopera (2020) report that food prices increased. Most Zimbabweans are employed in the informal sector which was affected by the lockdown (CARE International, 2020; Muorwel & Vincent, 2020). Understanding the effect of these stressors to the mental wellbeing of Zimbabweans is therefore vital. Quarantines themselves have an effect on people's daily activities and routines thus increasing levels of loneliness, harmful use of alcohol and drugs (Cosic et al., 2020).

The importance of the need for correct information to be passed to the general public cannot be over emphasised (Dzinamarira, Nachipo, Phiri, & Musuka, 2021; Li et al., 2020; Pavari, 2020). Rumours increase anxiety in individuals (Fardin, 2020; Wang et al., 2019). Media at times heightened this anxiety (Fardin, 2020). As COVID-19 is the first pandemic in history where technology and media have been used on a large scale to keep people informed, at times information overload, misinformation and the spread of myths and conspiracy theories through social media are rampant (Dzinamarira et al., 2021).

Research questions

1) What are the psychological, social and biological experiences of individuals in the clearing agent industry?

2) Were there notable changes in health that the participants experienced?

3) What coping mechanisms did participants adapt?

Methodology

A qualitative approach to research using a phenomenological research design was used for this paper. The interpretive or constructivist paradigm was used to enable examining of how the participants constructed meaning out of their daily interactions, giving meaning to the events and situations they faced (Leavy, 2017). This qualitative approach is suitable because of its advantage in giving detailed insight on individual experiences.

Participants and sampling

The population of interest was clearing agents responsible for the clearance of commercial goods that enter or leave the country who are part of the essential services as defined by Statutory Instrument 83 of 2020 (Public Health COVID-19 Prevention, Containment and Treatment National Lockdown Order, 2020). A combination of purposive and convenient sampling of 4 participants was used for the study. The participants were purposively selected because they had to report for duty during the lockdown period. The sample was also convenient in that they were participants that showed interest in participating in the research during the data collection period.

Data collection and data analysis

Open ended interviews were done through WhatsApp media platform and email. Initial questions were sent to the participants who sent back voice recordings and texts in response. Depending on the responses of individual participants, the researchers sent follow up questions. Social media platforms were convenient in identifying participants who were geographically spaced in location to include two participants in Harare and surrounding areas, one at Chirundu Border Post and another stationed at Beitbridge Border Post. Coding of responses into themes and subthemes was done followed by thematic analysis.

Ethical considerations

Authorisation to interview the participants were sought from their employers. Informed consent was sought from the participants who were informed of the research intentions. Participants were advised participation was voluntary and they could withdraw from the research without any repercussions. Confidentiality was assured to participants and pseudonyms were used as a measure to mask participant identity.

Results and discussion

Main themes identified included experiencing the pandemic as an employee, financial and psychological effects. Subthemes were also found to give further clarity to some of the main themes. Using a holistic approach, financial and physical effects have been identified and linked to psychological effect. Themes found were not too divergent from themes already found in researches already done on the effects of COVID-19 on mental health.

The lockdown periods imposed by most governments in the COVID-19 pandemic appeared to have a positive effect of controlling the spread of the virus (Muorwel & Vincent, 2020) but presented a variety of other problems. The effects of the COVID-19 pandemic are discussed below as themes identified through the interviews. The participants have been assigned pseudonyms, namely Kundai, Sam, Chipo and Natalie.

COVID-19 has effects on social relationships

Humans are social beings, therefore, isolation and lockdowns negated the natural human instinct (Pavari, 2020). Kundai explains how he could not see his friends and co-workers in the COVID-19 lockdown. His "…normal Saturday afternoon braais" were important for him because they were an important social platform to share life problems. Kundai claimed that some relationships are "cemented" by regularly seeing each other and these die without physical contact. Chipo and Natalie agreed when they pointed out they were not able to visit their parents thus affecting their bonding with extended family. Chipo feared infecting her elderly parents with the virus in case she had it since she believed most in Zimbabwe were asymptomatic. To explain Chipo's feelings, Li et al. (2020) claim that cognitive dissonance and insecurity are huge factors thus producing mental unease that individuals try to reduce by using social media to connect with their loved ones.

Experiencing the pandemic as an employee

The participants were formally employed in different areas and organisations. There was a variation in reactions to COVID-19 pandemic depending on their organisations. Subthemes identified were work pressure, perceptions of concern by the employer and financial effect.

Work pressure

Kundai and Chipo indicated there was an increase in workload. Kundai explained that he worked from home due to the need to reduce employees in the office. Challenges he faced included constant backlogs because some tasks were impossible to do from home. He also highlighted that some of his co-workers did not have access to internet, resulting in delays in deliverables. Chipo's workload increased because the lockdown restriction prevented movement of ordinary citizens to and from South Africa. These populations depended on South Africa for more affordable groceries. People started importing these groceries using commercial vehicles thereby increasing responsibilities in her line of work. This was in addition to staff working at less than full capacity to maintain social distance in their offices. Similarities can be drawn from the healthcare employees (British Columbia Ministry of Health, 2020; Dai, Hu, Xiong, Qui, & Yuan, 2020), to the extent that employees across the essential service providers faced an increase in workload which resulted in psychological stress as they may have felt overwhelmed and worried about their deliverables.

Kundai mentioned that he was not in a state of wellbeing, and so was not fully productive at work. This highlights the importance of balance between the different wellness paradigms like spiritual wellness, financial wellness and social wellness to mention a few (Galderisi, Heinz, Kastrup, Beezhold, & Sartorius, 2015; Manwell et al., 2015). Kundai expressed that his inability to be fully productive and to contribute to society was due his inability to do things that he enjoyed like art, karting, attending church. He mentioned he did not benefit from online services as he found it hard to concentrate. Socialising with friends, therefore, ordinarily helped him cope with stress. Literature agrees with this finding as boredom and stress were found as results of the lockdown (British Columbia Ministry of Health, 2020; Pavari, 2020).

Perception of concern of the employer

Employers need to give employees a sense of worth and care in the face of a pandemic (British Columbia Ministry of Health, 2020). This was in tandem with Chipo's

statement when she complained that her employer was not doing as she expressed that, "…they even refused to give us COVID allowance for reasons best known to them". This sentiment illustrates dejection and a sense that the employer did not care for the welfare of employees. Sam feared being laid off since business was low for his employer. This concern could be genuine as a Zimstat (2020) survey reveals that a fifth of respondents who were employed before the pandemic lost their jobs. Natalie lost her job by resignation after she was transferred from her then station to another town as she felt she was being forced to choose between her job and her children whom she felt needed her most during the COVID-19 pandemic.

Financial effect

Kundai and Sam's revenue from employment remained the same. Sam blamed this static salary on the fact that his employer was experiencing low revenue inflows. Kundai explained he was experiencing low revenues from his private income generating projects due to restrictions in movements imposed by the lockdown. These findings highlight that financial problems affected both individuals and companies (Matsungo & Chopera, 2020; Pavari, 2020). To Kundai, online sales were not good for his business because his kind of customers wanted to see what they were buying. The lockdown restrictions thus affected many entrepreneurs (Afolabi, 2020; CARE International, 2020; Pavari, 2020). By losing her job, Natalie lost her income from employment. These reductions in income can be highlighted as major sources of psychological strain (British Columbia Ministry of Health, 2020; Muorwel & Vincent, 2020).

Participants highlighted an increase in expenditure due to the use of online lessons for their children. This required that new gadgets be bought and a constant supply for internet data to enable lessons. Teachers also wanted to be paid extra lessons online. Chipo, who tested positive to COVID–19, mentioned a housemate asked her to get her children tested for COVID-19 as well when her son coughed and she felt hurt by this suggestion because she could not afford to get her son tested. These findings were convergent with literature findings indicating basic commodity prices increased and, at times, people could not access basic health care due to costs (British Columbia Ministry of Health, 2020; CARE International, 2020; Muorwel & Vincent, 2020; Pavari, 2020).

Disruption of normal life routines

To curb the spread of the virus, the COVID-19 pandemic came with lockdowns to ensure restricted movements within and across countries (Dzinamarira et al., 2021; Pavari, 2020; Wang et al., 2019). From the participants, evidence was found that daily life routines were affected. Highlighted were the effects on children's education and interpersonal relationships.

Effect on education

The lockdown disrupted children's normal schooling routines. Sam claimed his children appeared bored due to the extended absence from school. Participants with children expressed that they had to help their children with lessons delivered online at an extra cost when schools were closed. Natalie faced difficulties in demarcating school and play time. As a mother of three, she had to help each child with lessons and homework. Her children also exprienced problems with concentration and Natalie explained that, "… we all just got fed up at times and just did not do the work". This highlights frustration and being overwhelmed with schoolwork for her and the children and a failure to cope with the pressure of online learning. Natalie was concerned that the government appeared to be moving on with life as normal regardless of time lost in the lockdown era. She mentioned that her oldest child in grade seven appeared to be overwhelmed as the schools play catch up in preparation for the national exams which are an important selection tool for secondary school. Zimstat (2020) revealed that less than fifty percent of the children who were in school before the pandemic were using distance learning, one quarter of these being in rural areas though mobile learning applications were common in urban areas only.

Interpersonal relationships

Disruptions were noted in traditional family gatherings and social relations as restrictions banned or imposed reduced numbers at gatherings like churches, funerals and weddings (Li et al., 2020; Muorwel & Vincent, 2020; Pavari, 2020). Participants indicated they were not able to gather and celebrate joyous occasions. Normal mourning rituals for Zimbabweans were also disrupted as Chipo shared that she lost a close family member to COVID-19 and failed to mourn in the traditional way. She pronounced that:

> …we failed to mourn in the really traditional way and the burial was more painful as there was no body viewing to pay our last respects. It was the hardest funeral and it hurt the most.

Natalie explained how she had a different experience at a close relative's funeral. Natalie articulated that:

> Yes, there were restrictions and yes, we needed to sanitise keep a social distance. But the funeral was at a place where there was no running water. And it was in the ghetto. You don't tell people not to come. They come for the funeral. You start off masking up…but soon…you forget about the mask…you will be crying and hugging in your grief and you need to feed people. So, you will be at the open fire. You can't keep that mask on my dear. You just pray for God's protection.

This highlights the helplessness felt in balancing the requirements to adhere to COVID-19 regulations, personal fears of the virus and the need to mourn a loved one. Natalie's situation proves how social norms may influence individuals to disregard warnings and regulations in a time of an emergency.

Effect on social relationships

Psychological effects

Generally, participants revealed constant worries about their children and parents contracting the virus. Worry about the parents was motivated by their ages and having underlying chronic illnesses since research shows those with underlying illnesses are affected the most with the virus (British Columbia Ministry of Health, 2020; CARE International, 2020). Chipo feared dying and leaving her children orphans.

Natalie's fear was linked to her worries that her children may contract the virus from school. She indicated the schools seemed ill prepared of eventualities citing an incident where her child's classmate tested positive and the school authorities seemed not to have answers to the various questions that the parents had to ask about the way forward. Natalie indicated her helplessness by declaring that God takes care of the situation in her statement, "…*unongoti Mwari chengetai*".

Kundai also clarified his fears of death, elucidating that no one wants to die. He added that he still had a lot to achieve including getting married, having children and setting up a business. For Kundai, being infected by the virus brought these worries at the fore in this "vulnerable moment" as he described it. He also discovered that his sister was positive in South Africa when he was also infected here in Zimbabwe. This magnified his stress as he discovered that the South African strand was more potent. These findings are not far removed from what literature revealed (British Columbia Ministry of Health, 2020; Liang et al., 2020; Wang et al., 2019)

Changes in health

Changes in physical health, like having insomnia and changes in appetite, are usually associated with psychological problems like depression and anxiety (Afolabi, 2020; Pavari, 2020). Kundai shared his experience of restlessness when he was in hospital. Sam mentioned that he got a severe flu to the extent of having weak joints. Kundai showed concern about his immune system as well by highlighting that he now tries to live a healthier lifestyle so as to boost their immune system. Chipo indicated that she engaged in a lifestyle change more than a change in their healthy conditions. Both Chipo and Sam indicated they used supplements so that they could boost their immune system. These responses illustrate a preview to possible positive lifestyle changes. This is contrary to some findings in literature which tended to link the emergence of pandemics with an increase in health risk behaviours like drinking more alcohol and smoking (Cosic et al., 2020; Matsungo & Chopera, 2020).

Quarantine /isolation related effects

Kundai recalled his greatest challenge after testing positive to COVID-19. Being claustaphobic and asthmatic, self-isolation was the "…most difficult moment of his life". Kundai explained he felt at times that he would not make it out of hospital as he commented:

> There were nights especially when I was in hospital when I thought I would not live to see tomorrow. Mentally COVID-19 breaks your spirit because on the news and social media you keep hearing of deaths and there are social media jokes such as *mushonga wemapete unoraya kunge* COVID *(translated, "cockroach poison that kills instantly like COVID").*

Kundai mentioned that people kept dying in hospital and he was not sure if it was COVID or other ailments. Physical symptoms Kundai felt included feeling weak, not being able to move, loss of appetite and a sense of taste. Kundai discovered that people he was not really close to constantly checked up on him. He highlighted the importance of family support in such trying times. After recovery, Kundai still battled with many unanswered questions like why him because he tried his best to sanitise and abide by the regulations. This finding of constant mental turmoil during and after infection seems to buttress the finding in literature that the psychological effects of the pandemic are long term (Cosic et al., 2020; Liang et al., 2020). Kundai also realised the importance of counselling and pointed out that his workplace and society as a whole do not realise the need for psychological counselling after such traumatic events. Kundai added that African society is crueller on men who, traditionally, are not

allowed to show their emotions and express their feelings.

Chipo, who also tested positive felt confusion and devastation after being told over the phone to leave her workplace and go home to quarantine. She had a lot of unanswered questions and felt she did not know what she would tell her teenage son. As a breastfeeding mother, she was confused as to what to do with the baby and how to protect the infant from the virus. This excessive worry and panic displayed by Chipo highlights the effects of information gaps in the face of a pandemic thus the need for sharing correct and adequate information by authorities to reduce anxiety and stress (British Columbia Ministry of Health, 2020; Fardin, 2020; Pavari, 2020). Natalie's daughter kept asking why she could not go to school with the others after her classmates tested positive for the virus. The participant reported that:

> …but within a few minutes, she would twist the question again and come with a different angle. To me it showed she had some worry and did not know quite well how to express herself.

This was an indicator of possible anxiety and stress in the child who was trying to make sense of her situation.

Extra burdens of womanhood

Effects of the pandemic varied across individuals even according to their gender, as gender is one key determinant in the African settings of individual roles (CARE International, 2020). Women may bear an extra brunt of the pandemic. This assertion is supported by how Chipo, who tested positive as a mother of children at different ages, including one breastfeeding child. Her concerns for each of her children at their different ages gave her stress. She wondered how she would explain to the older ones and whether or not they would process the information well without too much stress. She also wondered how she could protect the infant she was breastfeeding and no one gave her any answers to her concerns. Chipo's personal predicament in this research buttresses that there is a need for a support system to help infected and affected people with the relevant information that they may need. Natalie was forced to resign from her job because she felt she needed to be present for her children during the pandemic, which she explained as a tough decision to make. Natalie also shared testimony of her friend who had to care for her father-in-law who had contracted the virus. She had the sole responsibility of scrubbing surfaces, washing soiled blankets, and took leave from work so she could take care of the patient. Natalie reported that her friend was always tired and worried about her getting infected or even about how to protect her children

from getting the virus in the same household.

Stigmatisation

Chipo felt stigmatised by her roommate who made a suggestion that Chipo should get her children tested for COVID too since one of her children was coughing. Stigmatisation has been found in previous literature to be a huge challenge that infected individuals endured in the pandemic (Afolabi, 2020; Cassim, 2020; Pavari, 2020; Wang et al., 2019).

Stress from daily hassles

Daily hassles entail the small stressors faced daily in going through daily life routines. Natalie mentioned that, due to acute transport shortages, she experienced stress from the daily task of attending work and going back home when she was still employed. The buses of the only permitted public transport company, ZUPCO, were overcrowded and took long to come. Hiking was dangerous and Natalie alluded to increased cases of abductions. Unofficial transport providers were prey to the police as they were not allowed to ferry people. They were also likely to cause accidents if chased by the police. Zimbabwe also employed the armed forces to enforce lockdown regulations (Muorwel & Vincent, 2020; Pavari, 2020). Natalie highlighted that this proved to be a source of discomfort and stress. She recounted a day when soldiers manning the roadblock forced them to disembark from bus, stand in a queue, and commanded to stand one metre apart. The participant claimed she may have frowned and one of the soldiers approached her and mocked her:

> *… uri kufinyama… chekutiita hapana (translated, "you are frowning…nothing you can do about us")*

Natalie claimed that without checking for anything, everyone was told to get back onto the bus. Daily hassles could lead to chronic stress in individuals which eventually leads to various physical ailments like headaches and chronic backpain (Sarafino & Smith, 2011).

Financial worry

The three participant who had children of school going age bemoaned the expenses that they had to endure to maintain an acceptable level of education for their children after the schools were shut down. Natalie mentioned how prices of food and basic commodities were increasingly becoming exorbitant. Natalie highlighted how Zimbabwe has a pricing system that results in expensive commodities hence the heavy

reliance on imports by individuals from South Africa. Following closure of borders, people were left with no choice but to endure the extortionate local prices of commodities.

Fears associated with the vaccine

The participants revealed a mixed reaction towards the COVID vaccine. Natalie was sceptical until her husband got vaccinated and did not react. Sam, on the other hand, was confident of getting the vaccination citing they have had many other vaccines before. He indicated that it is uncertain how one would react given that people may react differently to the weakened pathogen. Chipo retorted:

> Me and vaccine no. Those white supremacists hate us and see us as not people being made guinea pigs not my idea.

She went on to explain how getting the vaccine would not help since tests for this vaccine were based on the first variant of the COVID-19 which has since evolved into 2 and more variants. To her this meant people would not really be protected and this is shown in her comment when she expressed that:

> … So, for me to say it's a vaccine aaahhhh, it's a bit on the…. *kutorasika chaiko (translated, "totally misinformed")*. The truth is whatever it is that is being injected into you it will not make you immune, it does not make you better. You are just as good as someone who didn't receive the vaccine because you will still contract it, you will still need to do social distancing and you still need to do face masks, you still need to sanitise. So, it is pointless for people to get this vaccine coz it doesn't change anything, we will still continue to do what we have been doing. So, I would still say no to the vaccine, given the opportunity.

On the other hand, Kundai claimed that the close encounter he felt he had had with death made him more acceptable of the vaccine and was ready to accept it when it was offered in Zimbabwe. These sentiments indicate different perceptions of the intention by the government and those offering the vaccine which Dzinamarira et al. (2021) urges the government to try and address through various forms of social media.

Coping mechanisms

Participants indicated that they attempted to follow the COVID-19 regulations, mask up, sanitise and observe social distancing. Chipo avoided travelling and so tried to keep the children safe all the time. Natalie depended more on prayer and chatting with her family frequently indicating the importance of spiritual and social wellness paradigms (Baldwin, Towler, Oliver II, & Datta, 2017). To reduce financial stress, Natalie declared she avoided checking prices unless she needed to buy something.

Kundai indicated he relied on the Friendship Bench platform whenever he felt the need to talk and to have guidance thereby emphasising the importance of establishing online counselling services especially in times of pandemics (Li et al., 2020; Wang et al., 2019). Sam, when asked how they reacted to getting a severe flu, chuckled that they knew they would get better because of the various vaccinations that they have like measles. Each individual in this research presented a unique coping mechanism to help the make sense of their situations.

Embracing technology

All participants showed a move to relying more on technology in their day to day lives in the COVID-19 era. WhatsApp was used by all four participants to keep in touch with families or for extra lessons for their children during the lockdown period. Chipo used Zoom for her child's lessons. Natalie depended on YouTube to access education materials for her children. Kundai received online counselling from Friendship Bench but found online church services difficult to concentrate. Kundai reiterated how the use of technology through video calls helped him cope with the loneliness while he was in hospital as he was not allowed visitors, except for his uncle, a medical doctor, who brought him food. All participants agreed that using technology, though convenient, proved costly. This assertion that using technology was expensive was echoed in previous literature where indicators were that telecommunications service providers increased their tariffs during the lockdown period (Pavari, 2020).

Positive outcome from the pandemic

The participants, though they highlighted a lot of gloom due to the pandemic, indicated that positives have also come with the lockdown and its restrictions. Being made to stay home gave families time to bond (British Columbia Ministry of Health, 2020; Pavari, 2020), especially with their children while doing schoolwork. People also adopted healthier lifestyles as they have become more health conscious and watch what they eat and others exercise more. Examples of newly adopted foods include herbal teas.

Conclusion

In conclusion, COVID-19 pandemic has been found to have had a variety of effects on the workers in the businesses that were defined as essential services in Zimbabwe. The effects varied across individual circumstances. Financial and physical strains, and daily hassles were found to be among the stressors that caused psychological

discomfort in individuals. Psychological effect of the COVID-19 pandemic included boredom, loneliness, stress, depressive symptoms, devastation and helplessness. People were found to have a variety of coping mechanisms to adapt to the emergency situation they found themselves in, including depending on social media to stay in touch with families and friends and a belief in a spiritual power, God, as a supreme being. Positive lifestyle changes were also evident as people exercised more and cared for what they ate and drank. Varying opinions were also held about the COVID-19 vaccine.

Recommendations or Implications for Further Research

Further research should strive to include a more diversified sample. A mixed approach to research could be advisable in the future with an adequately large sample to enable generalisability of the findings. More research is also needed on each of the themes found in this study to get in-depth understanding of the themes so that enough information is found to advise populations at large, as well as service providers and policy makers, so that they are better prepared for any other global emergency of this nature that may arise. Better information dissemination from knowledgeable authorities is advised so that people are given reliable information to reduce anxiety and confusion. Mass media can be used as a tool to spread information and consideration must be given to spread the information to rural areas as well.

Employers need to provide more psychosocial support for their employees to help them cope with emergence of pandemics. Counselling services, for instance, need to be put in place to help employees cope with the extra fears and demands associated with the emergence of a pandemic. This study showed that some employees felt abandoned by their employers who did not adequately give awareness of COVID-19 and reassurances that the employee interests were at the heart of the employers. More education is also needed on COVID-19 vaccine's effects and implications.

There is a need for collaboration between the private sector as well as the government services to ensure resources like transportation, food, medication and protective clothing are distributed to those that need them.

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The Impact of COVID-19 Pandemic on Anxiety and Depression Symptoms of Inmates in Prison: A Case of Karoi Prison, Zimbabwe

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Abstract

An institutional based cross-sectional study was used from the month of December 2020 to March 2021 by taking a sample of 100 prisoners. Respondents were asked to complete a structured questionnaire and one prison out of five prisons in the Mashonaland West Province was purposely selected. A structured and pretested Shona Symptom Questionnaire (SSQ 14) was used for data collection. The mixed approach using a convergent research design was used. The quantitative and qualitative data was collected concurrently and the two data sets analysed separately and then mixing the two data bases by merging the results during interpretation and analysis. The SPSS Version 20 was used to analyse quantitative data. Descriptive *statistics such as frequencies and means were used to describe the data in the quantitative approach. Out of the 100 respondents in the study, 72% had depression and anxiety symptoms. Research findings from qualitative data were not included in the results due to limited time and space for this report.*

Keywords: COVID-19, depression, anxiety, mental health, inmates, prison

Introduction

Mental illnesses are more common among the prison populations than the general public (Dadi et al., 2016). Zirima (2020) also mentions that, during the corona virus (COVID-19) pandemic, not much attention had been paid to mental health although the Government of Zimbabwe has come up with a COVID-19 plan to protect people. There are approximately 20000 inmates incarcerated around Zimbabwe Prisons. Such a population has led the Zimbabwe Prisons and Correctional Service to come up with a COVID-19 plan to contain the spread of the virus within prisons. The ZPCS plan auguments the national government plan in this respect. The aim of the study was to assess the prevalence of anxiety and depression due to the COVID-19 pandemic among prisoners in Mashonaland West Province. Anxiety and depression are common experiences in everyday life.

Zirima (2020) posits that the novelty of COVID-19 makes people susceptible to pathological anxiety. Anxiety in this case emanates from uncertainty about when the virus would subside as well as fear of the disease. The World Health Organisation

expressed its concerns over the consequences pandemic, stating that the measures of quarantine would lead to increased anxiety, loneliness, depression, insomnia and self-harm such as suicidal behaviour (WHO, 2020d). Kumar and Nayar (2020) also mentioned that psychological reactions of fear avoidance and fear in meeting other people. Fear of death, fear of getting isolated and stigmatisation have also been largely observed. Evidence suggest that individuals may experience symptoms of psychosis, anxiety, trauma, suicidal thoughts and panic attacks (Nayar, 2020d). However, recent studies have similarly shown that COVID-19 affects mental health outcomes such as anxiety, depression and post-traumatic stress symptoms (Ahmed et al., 2020; Cao et al., 2020; Wang et al., 2019). Studies also discovered the impact of the outbreak of corona virus disease 2019 and its related factors on the public psychological state and the psychological impact of the COVID-19 epidemic on college students in China (Cao et al., 2020)

There is consensus among governments and mental health agencies alike that the COVID-19 pandemic has negatively impacted the mental health of many people, exacerbating existing conditions or triggering new conditions (Nirmita et al., 2020). Also, Nirmita et al. (2020) further report that one study found that mental health is negatively impacted due to worry and stress over the virus. According to the Prison Reform Trust (2020), the situation for people in prison is even worse as evidence shows there are disproportionately high rates of poor mental health among persons detained. Research suggest that around one in seven people in prison has a serious mental health condition. There are many reasons why the COVID-19 pandemic is affecting the mental health of people detained. Lockdowns, quarantines and isolation measures are known to have a particularly negative impact on mental health and wellbeing in normal times. There are also other factors such as decreased or complete lack of contact with the outside world and the usual support programmes and networks being scaled back or suspended. As in any community, fear of infection could cause severe stress and anxiety among prison populations. In Italy, news of transmission of the virus in detention facilities led to riots in numerous prisons, and compulsory psychological consultations were set up to help people cope with stress (Prison Reform Trust, 2020). In Kenya, the non–governmental organisation (NGO), Faraja, continued to give mental health support to people in prison through a remote phone service. According to the Irish Penal Reform (2020) in Ireland, the Prison

Service Psychology service provided a remote service giving people in prison a confidential opportunity to talk and receive important information.

In as much as the studies have been conducted the vulnerability of the prison population in the COVID-19 pandemic does not seem to be thoroughly explored by the scientific community (Henson et al., 2020). Therefore, it is necessary to examine and recognise people's mental states in this challenging, destructive and unprecedented time.

Research hypotheses

The study had the following hypothesis:

Ho: There is no significant impact of anxiety and depression on inmates mental during the COVID-19 pandemic in prison.

H1: There is a significant impact of anxiety and depression on inmates mental during the COVID-19 pandemic in prison.

Methodology

An institutional based cross–sectional study was employed from the month of December 2020 to March 2021. The study used the mixed method approach which is triangulation of both the quantitative research paradigm and the qualitative research paradigm. The qualitative research paradigm focused on discovering and understanding the experiences, perspectives and thoughts of the inmates (Harwell, 2011) to gather data from this phenomenological study. The qualitative research data are what participants in the study provide verbally, and the researcher is usually concerned with the meanings, attitudes and interpretations of participants (Barbour, 2008). The quantitative approach is applied through descriptive statistics. A mixed method approach which is a convergent design is used collecting quantitative and qualitative data concurrently analysing the two data sets separately and then mixing the two databases by merging the results during interpretation and analysis (Creswell, 2012).

Sampling strategy

Sample of 100 prisoners was selected from a prison in the Mashonaland West Province of Zimbabwe. The simple random sampling method was used to select the prison out

of the five prisons in the province. All the inmates selected at the prison were the study populations. Prisoners who were seriously ill were not included in the sample size as they were under quarantine from the rest of inmates.

Instruments

The data was collected using a structured interviewer administered questionnaire which is the Shona Symptom Questionnaire for the detection of anxiety and depression source. The Shona Symptom Questionnaire for detection of anxiety and depression SSQ14 was used to evaluate respondent's perceived change in mental health. It is also easy to understand by the respondents as it is translated into Shona language for easy comprehension of the questions.

Data analysis

The quantitative data was analysed using the Statistical Package for Social Sciences (SPSS) version 20. The descriptive statistics focused on frequencies and percentages. The qualitative data was transcribed verbatim. Each transcript was first transcribed into vernacular languages and then translated into English. All the responses to similar questions were grouped together. Common responses from answers to each question were further grouped in a master transcript. Themes were then identified using thematic content analysis.

Ethical considerations

Ethical principles were observed in carrying out the study. The participants were informed about the research problem and that they were not forced to participate in the research. They were informed that the information they provided would strictly be used for academic purposes only and therefore confidentiality was maintained. Permission was sought from the Zimbabwe Prisons and Correctional Service Headquarters research department.

Results

The mean score of the inmates was 9.38 indicating a high prevalence rate of anxiety and depression symptoms among inmates. The variance was 12 and standard deviation 3.6, whereas the mean age obtained was 32 and mode age was 25. The study showed that 72% of participant inmates were experiencing severe anxiety and depression. The study also indicated that multiple mode scores existed and the smallest value was 12. The 12 value is thus within the 8-14 score range which is within

a high range. The study revealed that the inmates were much bothered by not having enough personal protective equipment (PPE). The findings showed that 78% of participant inmates were afraid that they or their family members would become infected and unfavourable repercussions would occur. The study showed that discrimination and stigma related to infections made 65% of the selected participant inmates fearful of infection, which resulted in poor mental health.

Participants were asked where they obtained the information related to the disease. The findings showed that newly incarcerated inmates accounted for 82.9% of their information, officers 52.7 % and newspapers 10%. The inmates also mentioned that they had no proper sources of information about the COVID-19 pandemic cumulative figures.

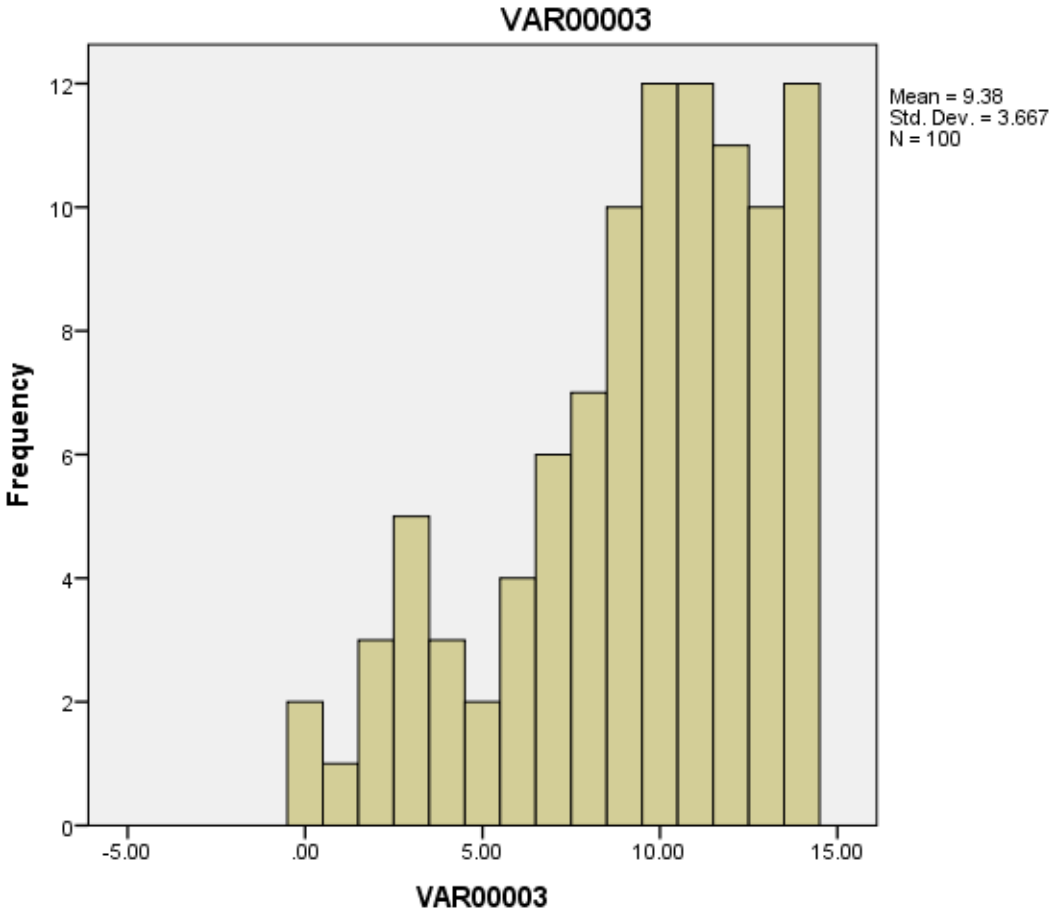

Figure 1: Shows the results of the Shona symptoms questionnaire for the detection of depression and anxiety (SSQ14)

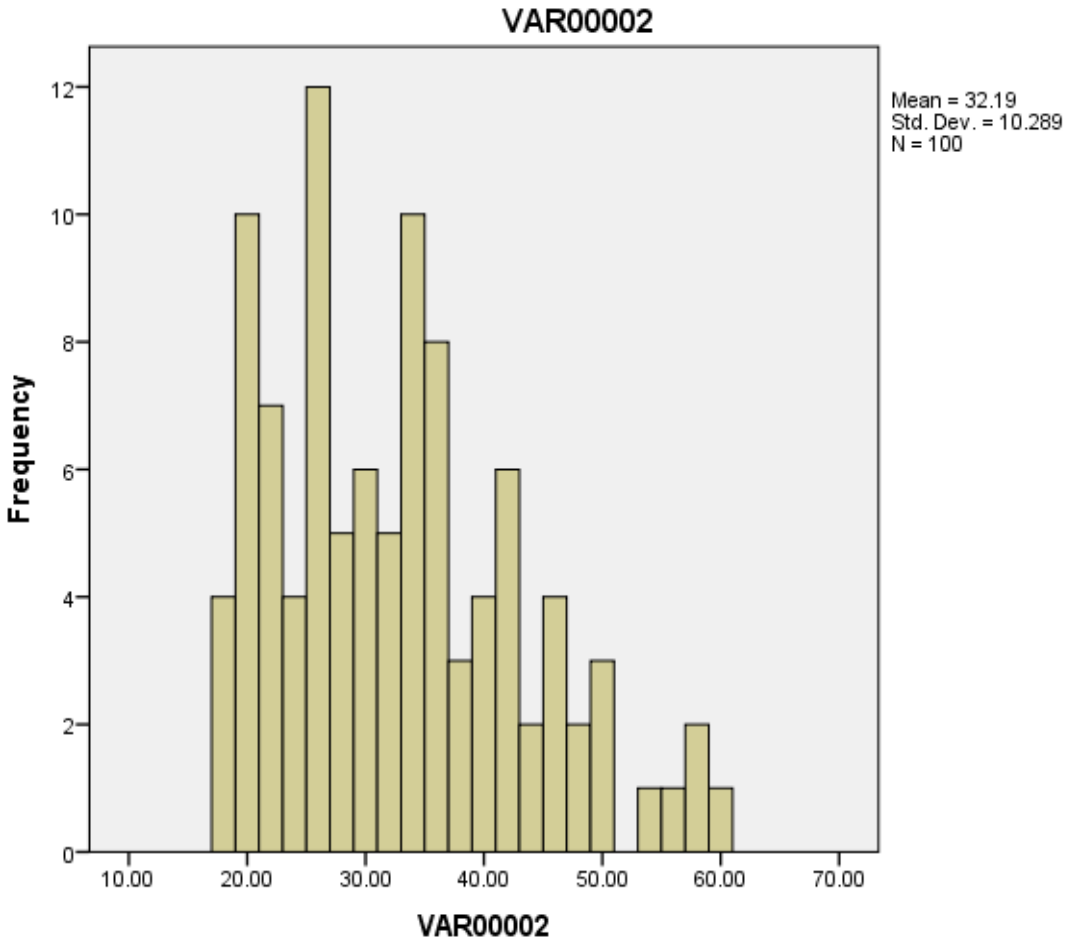

Figure 2: Showing participants age groups

Table 1: Multiple modes

		AGE	SSQ14 SCORE
N	Valid	100	100
	Missing	0	0
Mean		32.2100	9.3800
Median		31.0000	10.0000
Mode		25.00[a]	12.00[a]
Std. Deviation		10.34779	3.6670
Variance		107.077	12.256

a. Multiple modes exist. The smallest value is shown

Discussion

The results of this study managed to shed light on the unseen burden of COVID-19 outbreak on the mental health of prisoners, concurring with a study by Shahriarirad et al. (2021) which shed light on the burden experienced by the general population of Iran. In the current study, the inmates revealed that they were much bothered by not having enough personal protective equipment (PPE). The inmates were afraid that they or their family members could be infected and unfavourable repercussions may occur. This concurs with Choi et al. (2020) that research in Hong Kong revealed that a shortage of surgical masks occurred and created an uncertainty of when and where surgical masks would become available. This made people in Hong Kong feel worried and anxious.

Furthermore, discrimination and stigma related to infections made the inmates fearful of infection, which resulted in poor mental health status. This is similar to findings by Person et al. (2004) who found that during a pandemic, people are fearful that they would get infected. Recent studies in Iran (Ahorsu et al., 2020) and Italy (Soraci et al., 2020) found that fear of COVID-19 was significantly correlated with depression and anxiety as measured by the hospital anxiety and depression scale. Such findings are also relatable to the sentiments of inmates in the current study.

The inmates mentioned that they faced lack of proper sources of information about the COVID-19 pandemic cumulative figures. They revealed that the information they receive is mainly from officers, newly incarcerated inmates and old newspapers. Such a revelation concurs with a study by De Girolamo (2020) which explained that poorer mental health during the COVID-19 pandemic is a result of COVID-19 information overload which has been characterised by contradictory information from different sources, i.e., officers, other inmates and media. Gao et al. (2020) further report that those who received information about the disease from scientific articles and journals, rather than other sources such as social media, had a lower rate of depression and anxiety. It can be inferred that evidence-based information from scientific articles can reduce depression and anxiety by providing the reader with trustworthy information. Similar studies also reported that people who used mass media as their sources of information had higher rates of depression due to “infodemic”.

Johnson, Gutridge, Parkes et al. (2020) stated that the reported impacts on the mental health of imprisoned people are overwhelmingly negative, caused not just by fear of

COVID-19, but mediated through the regime changes implemented to minimise infection risks. This revelation concurs with the observation of the study that the quarantine regime also affected levels of anxiety. Inmates faced long periods of empty time resulting in over thinking. The prisoners further mentioned that lack of activities and the loss of family contact undermined people's wellbeing and contributed to depression.

However, the discussion around mental health in prisons is lacking robust evidence. Considering the physical and mental health vulnerabilities of prisoners, according to Huang, Zhou et al. (2021), understanding the impact of COVID-19 and the implemented regime changes is an urgent need. The current study provides the preliminary data about the impact of COVID-19 on mental health. Longitudinal studies are needed to understand the trajectories of mental health during the pandemic of COVID-19. Cross–cultural studies should also be considered to explore the regional variation of depression and anxiety during the COVID-19 pandemic. The qualitative studies are needed to understand how people cope with the pandemic and what psychosocial supports they need during the pandemic. The data are very important to future pandemic management.

Conclusion

Some 72% of the respondents had anxiety and depression due to the COVID-19 pandemic. The findings suggested that COVID-19 has substantially affected individual's mental health. One key policy implication of the present study is that the Zimbabwe Prison and Correctional Service should provide psychological support to inmates during a pandemic for example brief psychological interventions should be developed to diminish the adverse impacts of COVID-19 on mental health.

Limitations

There are limitations that should be considered when interpreting the study's findings:

a) First all of the outcomes were self-reported, which might lead to recall bias.
b) The study was a cross-sectional study, so the temporal change and trajectory of the respondent's mental health could not be observed.
c) The findings in the present study might not be generalised to other populations. Factors such as the prevalence of the COVID-19 and different mortality rate might affect the impact of COVID-19 on mental health.

d) Data about pre-existing diagnoses of depression and anxiety was not collected. Thus, the researcher could not control them in the analysis.
e) A further limitation is possible under reporting due to stigma associated with mental health, despite piloting and validation, as well as possible bias in self-reported experiences of pandemic related due to feelings of anxiety or depression.

Recommendations

- These impacts can be ameliorated by measures including the provisions of individual and communal socially distant activities such as clear communication with prisoners, limited incarceration, ensuring access to friends and family through telephones and video calls, effective risk assessment of the mental health of imprisoned people.
- Mental health support screening should be provided to COVID-19 suspected as well as confirmed cases to understand better individual mental health needs. People with underlying mental health illness such as anxiety, depression, panic etc should also be provided with practical mental health support during quarantine to minimise the distress that might come with being alone Kalisa, (Iraguha et al., 2020).
- Prison administrations should continue to facilitate mental healthcare provision and undertake specific efforts to mitigate negative mental health impacts of COVID-19 measures, including by working with community-based services. Mental health provisions ought to be prioritised as restrictions ease. Plans should be developed by healthcare staff and developed together with people detained and staff.

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COVID-19, Food Insecurity and the Vulnerable Households in Rural and Urban Zimbabwe: A Review

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Abstract

COVID-19 has disrupted the already fragile food systems worldwide, resulting in increased number of food insecure households. The objective of this review is to explore the implications of COVID-19 on food security and livelihoods for households in Zimbabwe. A review of literature on subnational information sources was conducted in line with the objective of the paper. The key findings are glaring and reveals the impacts of COVID-19. The consequences of the containment measures such as lockdown and restricted mobility are far-reaching. In Zimbabwe, the subsistence smallholder farmers and low-income urban households were at greater risk of the COVID-19 induced food insecurity through its disruption of food systems. The communal farmers suffered disrupted agriculture production and blocked access to the urban markets due to the lockdowns. Most of the urban poor rely mainly on the informal sector and; thus, the lockdowns eliminated their key sources of livelihood (vendors, commuter taxi drivers). Unfortunately, the government's social protection arms appeared not prepared to deal with these economic shocks of the pandemic. This has exposed some weaknesses in our local food systems and the need for resilience-based interventions to cushion the vulnerable households and build capacity to deal with future shocks.

Keywords: Livelihoods, resilience, food security, COVID-19, Zimbabwe

Introduction

The coronavirus disease 2019 (COVID-19) pandemic is a health and human crisis threatening the food security and nutrition of millions of people around the country. The pandemic comes at a time when more than 4.3 million people, according to the Integrated Food Security Phase Classification (IPC) analysis undertaken in February 2020 (IPC, 2020), are severely food insecure in rural areas in Zimbabwe. In addition, 2.2 million people in urban areas were identified to be, "cereal food insecure," according to the Vulnerability Assessment Committee (ZIMVAC) analysis (FNC,

2019). Border restrictions and lockdown measures adopted by the government to control or mitigate COVID-19 outbreaks are already affecting food supply chains and livelihoods of many families across the nation. The continuous increase in food insecurity, coupled with high food prices, negatively affect the nutritional needs, particularly of children, pregnant and lactating women. Such disruptions on livelihoods and food access can result in consequences for health and nutrition of an unseen severity and scale. The consequences of this include unprecedented food insecurity with individuals unable to meet their basic survival needs.

As a nation, nutrition programs including social safety nets must be scaled up. Good nutrition enables children to develop healthy immune systems, reducing future spending on healthcare throughout their lives. It also unlocks children's potential. Children who get the right nutrition in their first 1,000 days, that is, from conception until 2 years earn on average 21% more as adults and would actively contribute to the labour force of our nation (Bhutta et al., 2013). We know that undernutrition comes at a high human and economic cost. The economic costs of undernutrition, in terms of lost national productivity and economic growth, are significant. Collectively, the costs of poor nutrition represent an estimated loss of 2-3% of a country's GDP ("PMNCH | Global Nutrition Report: Malnutrition Becoming the 'New Normal' Across the Globe," 2016).

The authors used a systematic approach to search, screen and review sources/manuscripts for review. We searched Google Scholar, AGORA, JSTOR, ScienceDirect and PubMed databases for information on the impact of COVID-19 on food insecurity in rural and urban settings in Zimbabwe. In addition, newspaper articles, government departments, UN agencies, NGO and other organisation official reports were reviewed for evidence.

COVID-19, food, and nutrition security Zimbabwean context

Smallholder farmers and farming community

The outbreak of COVID-19 has rapidly spread across the world, affecting thousands of lives and livelihoods. The World Health Organisation (WHO) on March 11 2020 declared COVID-19 a pandemic. In Zimbabwe, the first imported COVID-19 case was reported on 21 March 2020 and local transmission started on 24 March 2020. The Zimbabwean government declared the COVID-19 crisis a "national disaster" on Friday, March 27 2020. Thereafter, the government instituted a nationwide lockdown

on March 30, which was then set to expire on a date to be advised. The containment measure, lockdown, was intended to slow the spread of COVID-19 and required all public activities to cease and most commercial enterprises to close, with exceptions for certain businesses classified as essential services. Based on the COVID-19 *SitRep* of 21 October 2021, Zimbabwe had recorded 132 540 cases 126 776 recoveries and 4 662deaths (MOHCC, 2021).

The COVID-19 pandemic severely threatens an already critical food and nutrition security situation arising mainly from the prevailing poor macroeconomic conditions and consecutive years of drought. The situation is set to worsen as the COVID-19 pandemic spreads, according to the new Global Food Crisis Report Forecast (GFCRF) (Zimbabwe Price Bulletin, 2020). The 2020 Zimbabwe Humanitarian Response Plan (HRP), launched on 2 April 2020, indicates that 7 million people in urban and rural areas are in urgent need of humanitarian assistance across Zimbabwe, compared to the 5.5 million projected in August 2019 (OCHA, 2021). Drought and crop failure, exacerbated by macro-economic challenges and austerity measures, have directly affected vulnerable households in both rural and urban communities. According to the 2021 Zimbabwe Vulnerability Assessment Committee (ZimVAC), it is estimated that during the peak hunger period (January to March 2022), 27% of the rural households would be cereal insecure and this translates to approximately 2,942,897 individuals (ZIMVAC, 2021).

In Zimbabwe, food and nutrition insecurity would likely increase for smallholder subsistence farmers whose main source of income is from farming and selling of vegetables. According to Taylor et al. (2008), lack of market access can have catastrophic effects on smallholder farmers, especially rural households as loss of potential revenue/income from sales of vegetables greatly reduces household buying power. Market access is crucial in smallholders' development because it creates the necessary demand, thereby creating sustainable increases in household incomes and food security, increased rural employment, and sustained agricultural growth (Aku, Mshenga, Afari-Sefa & Ochieng, 2018). Reduced household income levels mean that the household is no longer able to buy food, making the household food and nutrition insecure (FAO, 2012). In worst case scenario, the household might not be able to buy inputs to continue with farming in the next farming season. It is therefore critical to ensure unconditional market access for smallholder farmers to safeguard their food and nutrition security.

On the other hand, lack of market access by smallholder farmers is likely to affect nutrition security of urban households, especially the low-income earners. While supermarkets were categorised under essential services and allowed to operate during the whole period of the lockdown, many markets in urban areas, for example, tuckshops, roadside and open-air markets especially in the high-density areas were shut down. The impact of this is that most of the households in high-density urban areas who normally relied on these street open-air markets for their fresh vegetables (Kawarazuka, Béné & Prain, 2017) no longer had access to fresh vegetables, a situation that might have affected their dietary patterns, e.g., reduced dietary diversity. Smallholder farmers feed the urban population through informal markets and street vending. Usually, as early as 03:00 hours in the morning, the Mbare *Musika* market in Harare is buzzing with farmers from Mutoko, Murehwa, and surrounding farming communities (tradezimbabwe.com, n.d.). Because of limited mobility, smallholder farmers are finding it difficult to access their usual markets resulting in some urban households consuming less nutritious foods.

Urban households

Urban households are a vulnerable group in terms of food security due to reliance mainly on income than production. In this regard, any disruptions in income and food supply systems will cause unprecedented food insecurity. Based on an IMF report, although no representative data exists, the effect on food insecurity has been from containment measures more than the disease itself. Zimbabwe has the largest informal sector in Africa (60.6%) (future-agricultures.org, n.d.). Most live hand to mouth with little or no savings. Lockdown measures severely affected households dependent on the informal sector as evidenced by high number of urban households requiring food assistance (USAID, n.d.). An online survey on the effect of COVID-19 lockdown measures on dietary patterns enrolling households in the formal sector revealed more specific trends in terms of food and nutrition trends (Matsungo & Chopera, 2020). Results showed that there has been an increase in food prices with a decrease in availability of diverse foods in the shops. This has a ripple effect on household dietary diversity. There has been a decrease in consumption of all food groups except dark green leafy vegetables, probably indicating increased reliance on home gardens during this period. In overall, Zimbabwe has various overlapping threats. Rising unemployment, erosion of buying power from current salaries, failing health care system, existing diseases (NCDs) and outbreaks such as cholera and typhoid. All these

threaten to exacerbate the COVID-19 containment measures on the food and nutrition situation in households. COVID-19 restrictions also contributed to job losses by Zimbabweans in the diaspora; and this could have resulted in reduced external remittances. Families that rely on receiving cash or food-based remittances were thus at a high risk of food insecurity because of the disruptions linked to the travel restrictions. In summary, availability and access to food has been compromised in many families as a result of measures that have been put in place to curb the transmission of COVID-19. Interestingly, the Reserve Bank of Zimbabwe announced a 45% increase in diaspora remittances over the same period which was against the expected trend. This increase of course could be explained by the fact that lockdown forced Zimbabweans in the diaspora to send money via official channels since most informal channels were no longer active (RBZ, 2021). Albeit the overall trend remains those remittances went down and vulnerable households became at higher risk of food insecurity.

Nutritious food basket and social protection

Food and nutrition assistance need to be at the heart of social protection programmes. The government should protect food access for the most vulnerable by increasing their purchasing power through cash transfer projects and, where necessary, by directly providing food through community-based programmes. We propose that the government should consider providing a "nutritious food basket," of 5 food items that could help to prevent a spike in acute malnutrition in vulnerable households. These food items include fortified mealie meal, flour and cooking oil, beans and kapenta. On average, this food basket may cost $41.00 or equivalent in ZWD per family as shown in Table 1 below. The food items were identified because of their high nutritional value and wide consumption across Zimbabwe. An average family of five people, that is, two adults, an adolescent and two children may require minimum quantities highlighted in Table 1.

Table 1: The nutritious food basket for a family of five people

Food item	Unit Cost	Total amount / month	Total price
Mealie meal	USD 5.00/ 5kgs	15kgs	$15.00
Cooking oil	USD 3.00/ 2kgs	4 Litres	$6.00
Flour	USD 2.00/ 2kg	4kgs	$4.00
Sugar beans	USD 1.00/ 500g	2kgs	$2.00
Kapenta	USD 7.00	2kgs	$14.00
		Total (USD)	**$41.00**

Zimbabwe is one of the countries whose household-level food system is sustained by the activities of subsistence smallholders (Mhlanga & Ndhlovu, 2020). Our review shows that the impacts of COVID-19 and the consequences of the lockdowns are far-reaching and affects mostly the most vulnerable subsistence farmers in rural areas and the low-income urban households. The communal farmers, for example, suffered disrupted agriculture production and blocked access to the urban markets due to the lockdowns. At the same time, most of the urban poor who largely rely on the informal sector realised that the lockdowns eliminated their key sources of livelihood. Unfortunately, the government's social protection arms appeared not prepared to deal with these economic shocks of the pandemic. Many of Zimbabwe's farmers are already battling reduced productivity as a result of climate change induced droughts and floods. COVID-19 has further compounded the situation, thus, exposing the vulnerable households to food insecurity. This has exposed some weaknesses in our local food systems and the need for resilience-based interventions to cushion the vulnerable households and build capacity to deal with future shocks.

Recommendations

Given the socio-economic effects of the COVID-19 pandemic, social protection systems have become the mainstay for hundreds of millions of people across the globe for the duration of the current crisis and possibly beyond. Therefore, we recommend the following:

- Food and nutrition assistance need to be at the heart of social protection programmes. All stakeholders need to protect food access for the most vulnerable by increasing their purchasing power through cash transfer projects and, where necessary, by directly providing food through community-based programmes.

- To encourage formal markets, such as supermarkets, prioritise buying food from smallholder subsistence producers to help keep them in business through a guaranteed market "market creation".

- The government continue to prioritise farmers on the lockdown essential services list and that way the flow of agriculture produce from rural areas to urban markets may continue. However, this should be done with respect to social distancing and WHO protocols.

- There is a need for continued adherence to the WHO and Ministry of Health protocols of social distancing, washing hands, masking up to prevent a surge in the number of cases and a "possible 4th wave" that would see the country going back to strict lockdown measures.

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