Exploring the Impact of COVID-19 on Cervical Cancer Screening Services: A Qualitative Study of Healthcare Providers' and Women's Perspectives and Experiences

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ABSTRACT: A qualitative exploration was conducted to analyse the reasons behind the low utilisation of cervical cancer screening services in Gwanda district, Zimbabwe, focusing on the impact of the COVID-19 pandemic. The study involved 5 focus group discussions with 36 women, utilising maximum variation sampling to explore the effects of COVID-19 on screening coverage. Additionally, in-depth interviews were conducted with 25 health-care providers from primary health facilities and the provincial hospital offering screening services. The results suggest a decline in the progress of the cervical cancer screening programme due to the disruptions caused by COVID-19 which subsequently reduced women's access to screening and treatment services. It was anticipated that restoring women's confidence in adherence to screening would require time post-pandemic. Moreover, findings highlighted the potential progression of undetected precursor lesions to advanced cancer stages during non-screening periods, which may increase future cervical cancer morbidity and mortality. The findings underscore the importance of integrating cervical cancer screening messaging within broader health communication strategies to emphasise the significance of health interventions for overall well-being. This study recommends the adoption of more efficient screening methods, such as Human-Papillomavirus self-sampling to mitigate future disruptions in screening services, thereby guiding policymakers towards implementing best screening approaches.

KEYWORDS: Cervical cancer, screening, VIAC, COVID-19, Zimbabwe

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Introduction

Globally, cervical cancer ranks as the fourth most commonly diagnosed cancer among women and the fourth leading cause of cancer death, with an estimated 604 000 new cases and 342 000 deaths reported in 2020.[1] This represents a rise from 2018, when there were 570 000 new cases and 311 000 deaths, indicating a 6% increase in new cases and a 10% increase in deaths over the 2-year period.[2] All countries are affected although the incidence is higher in low and middle-income countries, which bear a high disease burden due to the poor implementation of prevention and treatment strategies.[3]

Significant progress in reducing the incidence of cervical cancer has been made worldwide due to the adoption of World Health Organization-recommended preventive measures, which include Human Papilloma Virus (HPV) vaccination, considered the 'best buy' for cervical cancer prevention, and high-quality screening.[3] However, the COVID-19 pandemic significantly disrupted cervical cancer screening programmes, requiring a restructuring of service delivery.[4-6] The prescribed measures to contain the transmission of the virus included lockdowns and travel restrictions, thus reducing access to health facilities.[5] Hence, there was a need for the reorganisation of screening services which involved shifting from flexible appointments to fixed timing invitations,[7] and temporarily suspending cervical cancer screening altogether.[4,8] This led to a significant decline in screening volumes[9] and potential delays in cancer detection,[6] causing heightened anxiety among women.

This study aimed to evaluate the impact of COVID-19 on cervical cancer screening services in a district within a Zimbabwean province that had one of the lowest provincial screening rates (8.2%) in the country, compared to the national average of 13%, according to the 2015 Demographic and Health Survey.[10] The study's findings could inform strategies to restore and sustain cervical cancer screening services disrupted by the pandemic.

Methods

Study setting

The study was conducted in Gwanda district, situated in Matabeleland South Province of Zimbabwe. The district comprises 24 rural electoral wards that include mines, and 10 urban wards. Gwanda Provincial Hospital, a public tertiary health facility located in one of the urban wards serves as a referral centre to 5 district hospitals in the province, and 29 primary health facilities in the district. Cervical cancer screening services have been provided at this facility on site since 2013 using the Visual inspection with acetic acid and cervicography (VIAC) method, and through outreach services to rural

populations. Women who get a VIAC positive screen result are referred to the provincial hospital for treatment. Screening services are also available at an urban clinic since 2020. The screening prevalence in the district was 19% in 2015,[11] and 30.1% in 2019 as revealed in the first phase of the broad study from which this current study emanated. This could be a reflection of a positive response to the national and district efforts at increasing awareness on the importance of cervical cancer screening.

Research design

This study is part of a broader research that determined barriers to cervical cancer screening in Gwanda district, Zimbabwe. The study was conducted in 2 phases using first, the quantitative then the qualitative methods. The first phase conducted in June 2019 was a cross-sectional survey which employed a researcher-administered questionnaire to collect quantitative data from 608 women in their households. The second phase, conducted in January 2021, applied a phenomenological methodological orientation. This approach yielded qualitative data through focus group discussions (FGDs) with a subset of women. These women were selected from survey participants using maximum variation sampling. The purpose was to further explore issues identified in the quantitative phase that would give depth of information in understanding barriers that women encountered in accessing cervical cancer screening services in the district. Focus group discussions were succeeded by in-depth interviews (IDIs) of purposively selected health-care workers to achieve triangulation of results.

Sampling procedures

Due to the extensive geographical coverage and the diverse nature of the target population, multistage sampling was applied in the quantitative phase of the study. This approach is also highlighted in the current qualitative study to illustrate its influence on the sampling procedure.

Sampling strategy for the first phase of the study (quantitative):

- Stratification of the 34 electoral wards into 3 clusters; urban, rural and mining areas
- Simple random selection of 10 electoral wards proportionate to size of strata: 6 from the rural areas, 1 from the mining areas and 3 from the urban areas.
- Stratified random selection of 1 village from each of the 6 selected electoral wards in the rural areas, 1 in the mining area, and 1 suburb from each of the 3 selected urban wards.
- Simple random selection of households from the selected villages/suburbs
- If more than 1 woman meeting the inclusion criteria were found in the household, simple random selection of 1 woman for analysis was done.

Sampling strategy for the second phase (qualitative) which is the focus of this study:

- Maximum variation sampling of women who had participated in the first phase was employed to select participants for the 5 FGDs. The variation in the small sample was maximised by identifying the diverse characteristics that constructed the sample.[12]
- Purposive sampling of health-care workers for in-depth interviews included: Community Health Workers (CHWs) and nurses-in-charge of 5 primary health facilities in the study wards, nurses-in-charge of the provincial hospital's departments that provided health services to women and, VIAC staff and programme administrators.

Inclusion and exclusion criteria

Women participants were selected from those who participated in the first phase of the study, while healthcare workers were selected based on presumed expertise, seniority, and work experience. Conversely, women who did not participate in the first phase of the study were excluded, as well as healthcare workers without relevant expertise, seniority, or work experience in the specified areas.

Sample size

Thirty-six women aged 25 to 50 years, and 25 health care providers with different roles in the cervical cancer screening programme participated in 5 FGDs and in-depth interviews respectively. These were both conducted face-to-face. Although 50 women had been recruited for FGDs, 14 declined due to fear of contracting COVID-19. According to Coenen et al.,[13] in maximum variation sampling, data saturation typically occurs at 5 groups, regardless of the coding approach, although the adequate sample size for reaching saturation may vary across studies due to different parameters. This principle guided the selection of the sample size for FGDs in this study.

Data collection procedures

Semi-structured FGD and interview guides were developed by the researchers to align with the study objectives, and applied with probes to solicit information on the COVID-19 related barriers to cervical cancer screening. Pretesting of the FGD and interview question guides was conducted on a convenience sample of 10 women and 5 healthcare workers who were not

included in the main study. This aimed to ensure clarity, relevance and comprehensiveness of the questions. The results of the pretest indicated that the guides were robust and effective in generating rich and relevant data, and no major changes were required. Focus group discussions lasting between 60 and 90 minutes were conducted in the isiNdebele language at community meeting places, while in-depth interviews lasting about 45 minutes were held at participants' workplaces at scheduled pre-arranged times. The FGDs and interviews were conducted by the first author (FM) who had an established relationship with the participants created during the first phase of the study. Community Health Workers were interviewed in the local language while English was used for the professional health-care workers. The researcher, fluent in both languages, audio-recorded FGDs and individual interviews after obtaining informed written consent from participants.

Field notes were made immediately after each FGD and interview to capture contextual details, non-verbal cues, and initial impressions, ensuring a rich and comprehensive data record to enhance the analysis. COVID-19 protocols were observed during data collection to minimise the risk of infection transmission between the participants and researcher, considering that the study was conducted during the COVID-19 pandemic.

Data analysis

The first author (FM), a female public health practitioner, transcribed the recorded FGDs and IDIs verbatim, translated them into English, and thoroughly reviewed the transcripts to ensure consistency and accuracy. Initially, the most frequently occurring phrases were manually identified, grouped according to their interpreted meaning, and colour-coded. This process was later facilitated by using Web ATLAS.ti software, enabling the generation of themes from the grouped codes. The second author (YT), a qualitative research expert and academic supervisor, ensured transparency and consistency of findings by reviewing the coding and themes.[14] Member checking was conducted with 80% of participants, who validated the themes and categories that emerged from the data analysis. Specifically, 85% of healthcare providers and 75% of women participants validated the derived themes on the impact of COVID-19 on cervical cancer screening services. Participants' voices are also presented as direct quotes from the FGDs and IDIs based on the themes that emerged.

Ethical Considerations

Ethical approval was obtained from the Health Research Ethics Committee of Stellenbosch University (Reference number S20/09/259), and the Medical Research Council of Zimbabwe (Reference number MRCZ/B/2426). In addition, permission was sought from the community gatekeepers, while written informed consent including audio-recording of sessions was obtained from all participants after a full explanation on the purpose of the study.

Table 1. Socio-demographic characteristics of FGD participants.

CHARACTERISTICS	FREQUENCY	(%)
Age group		
25-34	13	36.11
35-44	12	33.33
45-50	11	30.56
Number of children		
1-4	31	86.11
5+	5	13.89
Marital status		
Single	2	5.56
Married	30	83.33
Widowed	3	8.33
Divorced	1	2.78
Educational attainment		
Primary and below	13	36.11
Secondary	21	58.33
Tertiary	2	5.56
Screening status		
Screened	19	52.78
Not screened	17	47.22

Results

Participants' demographic and professional characteristics

The FGD participants' socio-demographic characteristics are presented in Table 1. There was an almost even distribution in age groups and screening status across the sample. Most participants were married, had between 1 and 4 children, and a secondary educational attainment.

Twenty-five community, primary and provincial hospital health-care workers were engaged in in-depth interviews. Table 2 provides a summary of their professional characteristics and functional levels.

Emerging Themes

Findings of the study suggest that the COVID-19 pandemic had a negative impact on the district's efforts to improve accessibility and acceptability of screening and treatment services, as well as on how eligible women perceived the importance of screening. Four major themes that emerged from the FGDs and IDIs were: (1) Reduced access to screening, (2) downgrading of the screening programme, (3) treatment delays for women with VIAC positive results and (4) disruption of VIAC quality management processes.

Table 2. In-depth interview participants by work position and area of operation.

POSITION	FUNCTIONAL LEVEL	NUMBER OF PARTICIPANTS
Doctors	Provincial hospital	2
Nurse administrator	Provincial hospital	1
Community health nurse	Covering the whole district	1
VIAC trained nurses	Provincial hospital and urban clinic	3
Non-VIAC trained nurses	Provincial hospital	6
Non-VIAC trained nurses	Primary health facilities	5
Community health workers	Grassroot level	7
Total		25

Reduced access to screening services

The national drive for VIAC screening implemented through varied demand creation strategies had resulted in more women seeking screening at both static and outreach sites resulting in overwhelming attendance. The COVID-19 pandemic however led to the suspension of VIAC screening services, as attention shifted to pandemic response initiatives, which entailed restrictions on gatherings and travel to contain the situation. Women motivated for screening subsequently failed to access the service as reflected in the following quotes:

> Women want to be screened but are scared of the possibility of getting Corona at the clinic. It has even become worse now because they [health authorities] don't want everyone to come to the clinic unless it's an emergency. Those who go queue and queue until they get discouraged and go back home before they can be screened (FGD 1, urban participant, 50 years, widowed, screened).

Health-care providers reiterated the sentiment of curtailed screening opportunities:

> When COVID-19 came, a lot of things closed down including our VIAC units. They were also slowed down since the era of COVID and many women could not be screened (Doctor 2).

> Women are not coming for this free service anymore. It's issues to do with COVID. This issue of COVID-19 is a challenge. . . Yes, it is a deterrent now to the community (Non-VIAC trained nurse, urban clinic).

> We usually mobilise women for screening by the outreach team but since last year [2020], we haven't had the outreach team coming to our health facility due to COVID (Non-VIAC trained nurse, Rural Health Center 5).

Downgrading of the screening programme

Despite imposed restrictions on cervical cancer screening due to the COVID-19 pandemic, some health services deemed 'critical' never ceased to be provided. Women construed this as a declaration by health authorities that screening was not as important as other services that continued to be provided. However, during lulls between COVID-19 waves, when cases and deaths decreased, screening and treatment services would resume.

> This programme only started coming to us through outreach last year and now they don't come because of COVID and women cannot be screened. So it means it's not important (FGD 4, rural participant, 26 years, single, not screened).

> It is surprising that when COVID-19 started, special teams from the Ministry of Health came down to the villages to teach us about it but how come the outreach services for screening are no longer there? The same should be done for screening because now people think the programme is less important and they won't bother to get screened again (FDG 5, rural participant, 47 years, married, screened).

> Gwanda Hospital used to conduct mobile screening but it has now been a long time because of COVID (FGD 3, mine participant, 27 years, single, screened).

> We usually have challenges on the uptake of these new programmes. But as of 2018, that's when women got to understand about cervical cancer screening and coming to 2019, women have been coming to inquire about screening yet the service is no longer available due to COVID. It will take a long time to get women re-motivated for screening (Non-VIAC trained nurse, Rural Health Center 3).

Treatment delays for women with VIAC positive results

The treatment procedure for women who get a VIAC positive screen is immediate cryotherapy by the screening nurse if indicated and the woman is agreeable, or as soon as they are ready. Cryotherapy eliminates precancerous areas on the cervix through freezing.[15] Women requiring loop electrosurgical excision procedure (LEEP) for further evaluation or treatment of abnormal cervical cells are scheduled for the next available Friday after the screening test. Those screened at outreach sites are referred to the provincial hospital for both cryotherapy and LEEP. However, women who had been scheduled for treatment prior to the COVID-19 lockdowns were unable to access it as non-emergency surgeries were deprioritised. Furthermore, women who were diagnosed at outreach clinics faced restricted travel. This posed a likelihood of progression to advanced stages, thereby increasing the risk of abnormal cervical conditions.

> As it is, I have five women who were screened six months ago and told to go to Gwanda for treatment. Because of COVID-19

> restrictions, they still have not gone and the disease is progressing. When they tell those who have not yet been screened, they [the unscreened] will see no reason for screening because it means it is useless since you won't get treated (CHW, rural ward 4).

> Before the COVID era, every Friday we were doing LEEPs at the hospital. We had lined up women for treatment. . . but when COVID-19 came, all those things stopped. So COVID-19 should I say, brought its own challenges (Doctor 2).

The VIAC trained nurse who assists Doctors with LEEP procedures confirmed the plans that were in place to clear the treatment backlog:

> Next week we will be doing a LEEP campaign on all women who tested positive on VIAC and have not been treated due to COVID-19. We have a backlog. There is a big list I had compiled and we need to clear them up (VIAC trained nurse 3).

Disruption of VIAC quality management systems

The cervical cancer screening programme in Zimbabwe entails VIAC trained nurses performing the screening procedure and assigning a negative or positive result which determines subsequent management. As indicated by 1 participant:

> Doctors are used in the programme to do quality control just to see if the images that will have been assigned as positive or negative are really that. Because the cervix is a dynamic organ which changes with age and also depending on the period of the menstrual cycle, sometimes you may see something and think it's positive when it is not. So it is for those quality control procedures that doctors come in (Doctor 1).

Quality control and assurance meetings were conducted at the provincial hospital once every week by a consultant Obstetrician and Gynaecologist for both VIAC trained and untrained nurses and doctors as a component of the VIAC programme. As alluded by 1 participant, visual tests are subjective in nature and dependent on the provider which results in wide variability in their performance in different settings.[15] The weekly quality control meetings were therefore aimed at improving screening competence of the VIAC trained nurses in order to maintain uniform and reproducible criteria for test positivity. This is to ensure that the nurses conducting the screening test accurately differentiate true positive and true negative cases in accordance with World Health Organization protocols.[15]

Following the onset of the COVID-19 pandemic, the frequency of quality control and assurance meetings was reduced. This was partly due to the limited availability of results for review, resulting from the suspension of screening services, and due to compliance with the restriction on 'unnecessary gatherings'. As highlighted by 1 of the quality control coordinators, the disruption of quality control and assurance meetings would have an impact on the future quality of screening:

> Before COVID-19, quality control meetings on VIAC were done on a weekly basis, but with COVID in the picture, it has been very infrequent. Now their [VIAC trained nurses] level of proficiency may not improve because those doing VIAC should get regular training (Doctor 1).

The meeting participants verified that:

> Every week we used to have quality assurance meetings on Mondays prior to COVID-19. We used to learn a lot. We are not having them anymore (Non-VIAC trained nurse 6, provincial hospital).

Discussion

This study provides insight into the impact of the COVID-19 pandemic on VIAC screening services in Gwanda district. Based on our findings, we hypothesise that even if the programme is fully restored, there will be a lag in screening attendance due to the lost momentum, both nationally in Zimbabwe, and specifically in Gwanda district. It may be important to consider potential strategies to regain the momentum in order to improve the demand for screening.

Similar studies conducted in Zimbabwe confirm the initial shutdown of VIAC services at the beginning of the pandemic and erratically through the first, second, third and fourth waves which peaked in July 2020, January 2021, June 2021 and November 2021 respectively.[16,17] Consequently, screening was inaccessible to the majority of women in the country. Consistent with our findings, although lockdowns were gradually relaxed, screening services in most centres remained minimal as women who were not acutely ill shunned visiting health facilities out of fear of contracting COVID-19.[18] As a result, potential screen-seeking women lost the opportunity to access the service due to transmission reduction policies and individual factors, a situation that requires urgent attention.

Still consistent with our findings and other studies conducted in Zimbabwe, COVID-19 related screening interruptions were a global phenomenon, resulting from the universal implementation of COVID-19 restrictions. For instance, in England and Italy, although cervical screening continued, invitations for screening recalls were restricted to women with previous high-risk HPV positive results, or were converted from flexible scheduling to fixed appointments to prevent overcrowding.[7,19] Although the increased workload led to physical and psychological exhaustion and burnout among health workers, doctors also reported higher satisfaction due to the ability to effectively plan their work schedules.[7,20] Moreover, in England, women showed reluctance to attend screening services during the second wave (September 2020-April 2021), despite services remaining operational, resulting in reduced attendance rates,[19] consistent with the findings of this study. Similar trends were also observed in Slovenia, Italy, Canada, Scotland, Belgium, and the USA,[21] indicating a global phenomenon where the COVID-19 pandemic led to reduced rates

of cervical cancer screening, regardless of country income and status.

The suspension of screening services during COVID-19 waves aimed to protect healthcare providers and recepients by curbing transmission. However, our findings suggest that women misinterpreted this measure as an indication that cervical cancer screening is non-essential for their health and well-being. Consequently, they may be less likely to seek screening in the future. Murewanhema,[18] concurs that clients may not be electively seeking cervical cancer screening services for a long time to come as an aftermath of COVID-19. Burger et al.,[4] however, argues that a rebound to pre-pandemic screening attendance levels is likely for those who comply with the screening guidelines. Nevertheless, the impact might be negative for those with a history of non-participation, which is largely the case in this study where the national screening programme is not yet fully established.[22]

The global COVID-19 response inadvertently compromised existing public health gains and overlooked local contexts,[23] undermining efforts to eliminate cervical cancer by 2030.[3] This oversight has serious implications for public health and must be addressed in preparation for future emergencies.

The study also found that both community and health-facility based healthcare providers reported missed opportunities and delays in further evaluation and treatment for women with VIAC positive results before the lockdowns, increasing the risk of cervical cancer development. Consistent with our findings, other studies have also argued that delays in screening, management, and treatment may result in early-stage abnormalities remaining undetected or inadequately treated.[8,24] Hence, the most concerning implication is an increase in future cervical cancer morbidity and mortality.[9] This, in turn, necessitates aggressive treatment methods and increases the risk of complications and mortality, making it imperative to implement measures to fully re-establish cervical cancer screening services.

A positive outcome from this study was the priority that was given to catch-up management for women with untreated VIAC positive results when screening services resumed. This reflects the efficient health information management that facilitates ease of client follow up, a practice that needs to be maintained. It is anticipated that women will respond positively to the call, contrary to findings of a previously conducted systematic review.[6] In that review, low participation rates were noted in most settings including developed countries, despite attempts to mitigate the backlog caused by lockdown measures during the pandemic.

This study raised a concern on the proficiency that VIAC trained nurses might have lost due to prolonged periods of non-practice of screening, and infrequent attendance of quality control and assurance meetings. As Murewanhema[18] maintains, health-care workers who are involved in screening require continuous exposure to the procedure to prevent loss of efficiency over time. Restrategising cervical cancer screening services to ensure continued provision during sustained emergencies like COVID-19 is crucial to prevent adverse sexual and reproductive health and rights outcomes for women.

Strengths and Limitations

While the study aimed to explore the impact of COVID-19 on cervical cancer screening services, it is essential to acknowledge the potential biases, constraints, and areas for improvement in order to provide a balanced view of the research.

The qualitative approach provided rich, detailed insights into the experiences and perspectives of a range of healthcare providers and women, ensuring diverse perspectives and experiences. In addition, the study addresses a critical issue that arose during the pandemic, providing insights for healthcare policymakers and practitioners in the preparation for potential future pandemics. Furthermore, the study establishes the foundation for subsequent quantitative or mixed-methods studies to build upon and expand the findings.

This study is however, not without its weaknesses. Due to its qualitative nature, the sample size was determined by theoretical saturation rather than a priori power calculations, which may have resulted in a larger sample size. The limitation of not conducting a power analysis for sample size calculation may impact the generalisability of the findings, thus limiting the applicability of the results. Specifically, the sample size may not be representative of the larger population, potentially missing important perspectives or experiences. The findings may also be biased towards the specific participants recruited, rather than reflecting the diversity of the population. Additionally, the results may lack precision, potentially leading to incomplete or inaccurate conclusions. Finally, with a smaller sample size, important themes or patterns that would have emerged with a larger, more diverse sample may have been missed. By acknowledging these limitations, we hope to provide a more nuanced understanding of our study's contributions and potential areas for future research.

Conclusion

The COVID-19 pandemic brought unprecedented challenges to cervical screening services in the Gwanda district of Zimbabwe. This reversed the gains that had been made on its prevention and control in support of the global strategy of eliminating cervical cancer as a public health concern by 2030. In alignment with the global and national initiatives, Gwanda district had over the years made substantial progress towards setting up screening programmes at 2 sites, and creating extensive awareness on the acceptance and uptake of cervical cancer screening. Inconveniently, the COVID-19 pandemic caused disruptions in screening provision which however continued to be progressively restored as the pandemic was brought under control. Downgrading cervical cancer screening to a non-essential service, despite extensive awareness campaigns and the resulting surge in demand for screening could have undone

the progress achieved by the programme. Full restoration of screening acceptance and service delivery to the high level they had reached may therefore present challenges to a healthcare system that is already fragile.[18]

Implications for Practice

Delays in access to screening caused by the COVID-19 pandemic, hindered other cervical cancer services including follow-up diagnostic procedures, and timely treatment for women in need. Although there has been no formal assessment to measure the impact of the pandemic on the VIAC programme in Gwanda district, the findings of this study suggest a decrease in the screening and treatment levels due to COVID-19. To restore communities' confidence on the importance and benefits of screening, future consideration could be given to exploring the effectiveness of increasing cervical cancer awareness through various media platforms. In addition, further research is needed to assess the impact of incorporating cervical cancer screening messages into all health communication. Moreover, piloting initiatives to restore and increase cervical cancer screening outreach services to rural communities could be explored to address disparities.

Building on Wentzensen et al.[24] warning of potential future pandemics, it is essential to integrate resilience into the VIAC programme to mitigate disruptions and ensure uninterrupted cervical cancer screening services. Adopting novel, efficient screening methods can mitigate future service interruptions, ensuring sustained early detection and timely management, crucial for achieving the 2030 target of eliminating cervical cancer.

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Author Contributions

FM, a PhD student with a MPH qualification, conceptualised the study, collected and analysed data, and drafted the manuscript. YT, the academic supervisor, provided oversight on conducting the study, contributed to data analysis and edited the final manuscript.

Ethical Approval

Ethical approval was granted by the Health Research Ethics Committee of Stellenbosch University (Reference number S20/09/259) and the Medical Research Council of Zimbabwe (Reference number MRCZ/B/2426).

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