

## ORIGINAL RESEARCH ARTICLE

# Exploring the factors contributing to contraceptive stock-outs at primary health care clinics in North-Eastern Namibia: A qualitative descriptive study

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### Abstract

Millions of women face barriers to accessing contraception due to supply-side issues, including limited health facility access and contraceptive stockouts. Research on the causes of stock-outs remains scarce. This study explored contributing factors within primary health care clinics in north-eastern Namibia using a qualitative, explorative, descriptive, and contextual approach. Semi-structured interviews were conducted with sixteen participants selected through convenience sampling. Data were audio-recorded, transcribed verbatim, and analysed thematically. The analysis revealed three main themes: contraceptive stock-outs, contraceptive supply and demand challenges, and strategies for ensuring consistent availability of contraceptives. The findings revealed that poor contraceptive stock management, theft, and supply–demand discrepancies are significant factors contributing to stock-outs. The critical issue identified was the limited pharmaceutical knowledge among staff which leads to sporadic contraceptive availability. Pharmaceutical knowledge of contraceptive procurement and supply management is needed to prevent stock out of contraceptive. The study highlights the urgent need for training healthcare personnel involved in contraceptive procurement and supply management. These insights gained from this study can assist the Ministry of Health and Social Services and stakeholders to develop targeted strategies to prevent stock-outs and improve contraceptive access in Namibia and similar settings. (*Afr J Reprod Health* 2025; 29 [7]: 36-47).

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**Keywords:** Humans, contraceptive agents, Namibia, stock out, contraception, health services accessibility, primary health care

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### Résumé

Des millions de femmes rencontrent des difficultés d'accès à la contraception en raison de problèmes d'offre, notamment un accès limité aux établissements de santé et des ruptures de stock. Les recherches sur les causes de ces ruptures restent rares. Cette étude a exploré les facteurs contributifs au sein des cliniques de soins primaires du nord-est de la Namibie, à l'aide d'une approche qualitative, exploratoire, descriptive et contextuelle. Des entretiens semi-structurés ont été menés auprès de seize participantes sélectionnées par échantillonnage de convenance. Les données ont été enregistrées, transcrites textuellement et analysées thématiquement. L'analyse a révélé trois thèmes principaux : les ruptures de stock de contraceptifs, les difficultés d'offre et de demande de contraceptifs, et les stratégies pour garantir une disponibilité constante des contraceptifs. Les résultats ont révélé qu'une mauvaise gestion des stocks de contraceptifs, les vols et les écarts entre l'offre et la demande sont des facteurs importants contribuant aux ruptures de stock. Le problème majeur identifié était la connaissance pharmaceutique limitée du personnel, qui entraîne une disponibilité sporadique des contraceptifs. Une connaissance pharmaceutique de l'approvisionnement et de la gestion des stocks de contraceptifs est nécessaire pour prévenir les ruptures de stock. L'étude souligne l'urgence de former le personnel de santé impliqué dans l'approvisionnement et la gestion des stocks de contraceptifs. Les enseignements tirés de cette étude peuvent aider le ministère de la Santé et des Services sociaux et les parties prenantes à élaborer des stratégies ciblées pour prévenir les ruptures de stock et améliorer l'accès aux contraceptifs en Namibie et dans des contextes similaires. (*Afr J Reprod Health* 2025; 29 [7]: 36-47).

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**Mots-clés:** Humains, agents contraceptifs, Namibie, rupture de stock, contraception, accessibilité aux services de santé, soins de santé primaires

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### Introduction

Contraceptive stock-outs are a global phenomenon.<sup>1</sup> Increasing access to contraceptives is recognised as a critical and highly cost-effective

intervention for improving maternal and new-born health, reducing maternal mortality and supporting individuals' ability to exercise their reproductive rights.<sup>1</sup> Unplanned pregnancies remain a significant global reproductive and public health concern

among women. Therefore, access to contraceptives is vital for achieving maternal and child health-related Sustainable Development Goals (SDGs). Contraceptives enable women to limit or space births, prevent unintended pregnancies, reduce unwanted births and unsafe abortions, and lower maternal and infant mortality rates. Family planning (FP) offers proven benefits in terms of gender equality, maternal health, child survival and HIV prevention.

Moreover, contraception use among adolescents can enhance their life opportunities by promoting longer education, fewer pregnancies, a later and healthier start to childbearing, and more opportunities to engage in income-producing activities. According to Thobani *et al.*, global contraceptive use increased from 55% in 1990 to 64% in 2015.<sup>2</sup> However, despite the availability of contraceptives at public health facilities, the prevalence of contraceptive use among women remains low, contributing to a rise in unplanned pregnancies, sometimes leading to termination. This suggests that contraceptives may not be accessible to women when needed, meaning the need for contraceptive use is unmet. Koffi *et al.* note that stock-outs likely play a role in this lack of access, though the relationship between contraceptive availability and use remains poorly understood.<sup>3</sup> Additionally, Muhoza *et al.* explain that millions of women continue to lack access to contraception due to supply-side barriers such as poor access to health facilities, low availability of contraceptive methods and stock-outs.<sup>4</sup> The availability of contraceptives and the occurrence of stock-outs vary widely across countries and across methods.

Different countries experience unique supply chain challenges that differentially impact method availability and stock-outs. The policy environment surrounding contraceptives also likely contributes to variations in contraceptive stock-outs and method availability across health delivery sectors. For instance, a 2018 USAID report indicated that among 36 countries reporting supply chain challenges, 15% cited formal and informal policy barriers that hinder the private sector's ability to provide contraceptive methods.<sup>4</sup> Globally, an estimated 40% of pregnancies are unintended; that is, they occur too soon or are not wanted. Among these, 84% occur in women with an unmet need for reliable contraception. If all unmet needs

for contraception were satisfied in low-income regions, it is estimated that unintended pregnancies could decrease by as much as three-quarters, and maternal deaths could be reduced by one-third. The far-reaching benefits of contraception align with many of the SDGs, and reducing unplanned pregnancy is a priority for the global health community.<sup>4</sup> As of 2017, approximately 214 million women in developing countries who want to avoid falling pregnant have an unmet need for modern contraception, with the majority (57%) residing in Sub-Saharan Africa and Southern Asia.<sup>5</sup>

Namibia, as a developing country, faces high rates of unwanted pregnancy and maternal and infant mortality, with an estimated 215 per 100,000 live births in 2020 – three times higher than the average reported for upper-middle-income countries.<sup>6,7</sup> Despite regular stock taking being a routine process at health clinics, the causes of contraceptive stock-outs remain unclear. This uncertainty has generated interest in identifying the factors associated with contraceptive stock-outs in the Kavango East region of Namibia. Exploring the factors associated with contraceptive stock-outs is crucial in order to devise interventions that may mitigate future stock-outs. However, there is a dearth of information on this issue in the Kavango East region. In order to address the dearth of information on the factors associated with stock outs of contraceptive in Rundu primary health clinics, Kavango East region, Namibia. The aim of the study was to explore and describe the factors associated with stock out of contraceptives in the Kavango East region, Namibia. The objectives of the study were to explore and describe the factors associated with stock out of contraceptives in Kavango East region, Namibia.

This study bears significance in the sense that the outcomes of the study could provide measures that can be implemented to mitigate the factors associated with contraceptive stock out. Addressing factors associated with contraceptive stock outs could be useful to women and community at large by reducing rates of unintended pregnancies, ensuring contraceptives availability, reduce unsafe abortion and reduces HIV transmissions from mothers to newborns. Moreover, contraceptive availability could help the community/women to delay childbirth and increase their human capital investment in education and their careers. This study outcomes may also benefit the Ministry of

Health and Social Services and its stakeholders both nationally and internationally, as the findings from this study may be used to develop ongoing strategies and targeted interventions that are geared towards addressing the factors associated with contraceptive stock out. Additionally, the findings of this study would assist policy makers in the Ministry of Health and Social Services (MoHSS) to foster policies that will scale up the existing challenges/factors contributing to contraceptive stock outs in health facilities.

## Methods

### *Study design*

The researchers employed a qualitative approach for this study, utilising explorative, descriptive, and contextual strategies to gather data on the phenomenon under investigation. According to Hunter *et al.*,<sup>8</sup> the aim of explorative research is to “understand the underpinnings of specific phenomena and explain specific and systematic relationships among them so that they are described in rich detail”. Maree and Molepo emphasise that a qualitative research design is “naturalistic, focusing on natural settings where interactions occur”.<sup>9</sup> This article presents the study design, analysis and results in line with the Consolidated Criteria for Reporting Qualitative Research (COREQ) guidelines.<sup>10</sup>

### *Study setting, population and sample*

The study was conducted in the Rundu district, encompassing all primary health care (PHC) facilities in the Kavango East region. Contraceptives, including family planning options such as condoms, morning-after pills, injections (like Depo Provera) and implants, are provided at no cost. The nurse-to-patient ratio at these facilities is 1:53, with nurses receiving in-service training from the Ministry of Health and Services on delivering contraceptive services to local people through community engagement and school visits. The study population consisted of registered nurses, enrolled nurses, pharmacists and assistant pharmacists in the Rundu district. According to the staff complement from the Rundu district office, there are 35 registered nurses, 37 enrolled nurses, six pharmacists and nine assistant pharmacists in

this area. This study used a smaller sample of 16 participants, which may limit the breadth of perspectives. There is therefore a need for the researcher to justify their sample size in qualitative research to demonstrate the trustworthiness of the findings. However, unlike quantitative research where statistical power drives the sample size, in qualitative studies, the focus is on having nuanced insights and a detailed analysis.

Participants were conveniently selected from the 12 PHC facilities in the form of Rundu urban clinics, situated in areas with plantation farming communities. Inclusion criteria for participant selection included: 1) being a registered or enrolled nurse working in primary healthcare in the district, or a registered pharmacist or assistant pharmacist; 2) willingness to participate in the study; 3) availability at the time of data collection; and 4) willingness to provide written consent. The interviewees were asked what factors are associated with contraceptive stock-outs in urban clinics. They were also asked what recommendations could be proposed to prevent contraceptive stock-outs in the urban clinics. Interviews continued until data saturation was achieved, which is the point where additional interviews yielded no further new information.<sup>11</sup> Furthermore, two interviews were conducted to confirm data saturation after the 16th interview. At this point, the researchers ceased the data collection process as no new data on the phenomenon under investigation would have surfaced.

### *Data collection*

Data collection took place in May and June 2023. The researcher approached potential participants and described the intent of the study; those who agreed to take part were asked to sign a consent form. Before data collection began, a pilot test was conducted with four subjects to refine the interview guide where necessary. The pilot interview indicated that no changes were needed. Following this, details for each interview were confirmed with the interviewees. Data were collected through semi-structured interviews, in line with the interview guide, research objectives, literature review and research questions. The researcher made field notes to capture nonverbal cues and body language. Interviews were conducted in locations chosen by the interviewees and lasted between 40 and 45

minutes. The research questions were formulated as follows: 1) What factors are associated with contraceptive stock-outs in urban clinics in the Rundu district, Kavango East region, Namibia? 2) What recommendations can be proposed to prevent contraceptive stock-outs in the urban clinics in the Rundu district, Kavango East Region, Namibia?

### **Data analysis**

The audio-recorded interviews were transcribed verbatim for concurrent data collection and analysis with manual coding, which involved reading over and over each comment and assigning labels manually. Basic demographic details of participants were collected. The researcher used an inductive approach to analyse the data, using the thematic analysis technique. The researcher used the reflexive thematic analysis approach, which focusses on people's experiences, views, perceptions and representations of a particular phenomenon.<sup>13</sup> Thematic analysis was used to focus on the participants' views, experiences and perceptions regarding the phenomenon under investigation.<sup>13</sup> Braun and Clarke's six phases of thematic analysis were employed: "Step 1: Familiarisation (getting to know the data); Step 2: Coding; Step 3: Generating themes; Step 4: Reviewing the themes; Step 5: Defining and naming themes; and Step 6: Writing up the analysis and generating a report."<sup>13</sup>

Prior to data collection, the researcher noted participants' personal views and existing knowledge in order to achieve 'bracketing', which involves noting and setting aside their "a priori knowledge and assumptions, with the analytic goal of attending to the participants' explanations with an open mind". The author read the field notes in conjunction with the transcribed data as the data analysis process unfolded. A coding tree was designed by the first author, which highlighted the themes and described how each sub-theme was developed. The coding tree also clarified codes for each theme. The coding process was used to understand how the themes were categorized and showed that the themes were analysed from collected data as opposed to being selected beforehand. The author resolved themes and sub-themes to write a meaningful report.

An independent coder who was not one of the co-authors undertook an inquiry audit, and a consensus was reached on the themes and sub-themes. This process involved analysis of the coding tree, the transcribed data and the field notes to establish that each of the themes was extracted from the collected data. The independent coder had comprehensive experience in qualitative research and was also a nurse educator with a Doctorate Degree in Nursing Science. The trustworthiness of the study was established using a model Lincoln and Guba that confirmed credibility, dependability, confirmability and transferability.<sup>14</sup>

### **Ethical considerations**

This study was approved by the University of Namibia Health Research Ethics Committee (HREC) (Ref: SoN 26/2023), as well as the Ministry of Health and Social Services' Research Ethics Committee (MoHSSREC) (Ref: 22/3/1/2). Participants gave written consent prior to participating in the study. All data collected from the database was kept confidential, with participants' details maintained anonymously.

## **Results**

### **Participants' characteristics**

Participants in this study included three pharmacists, three pharmacist assistants, six registered nurses and four enrolled nurses working in urban clinics in Rundu, Kavango East, Namibia. This group comprised six males and 10 females, all of whom were under 50 years old, with the majority aged between 25 and 45. Seven of the participants had certificates, while nine had honours degrees. Their years of experience ranged from one to seven years.

### **Theme 1. Stock-outs of contraceptives**

This theme encompasses participants' knowledge regarding the factors contributing to contraceptive stock-outs. Contraceptive stock-outs are a significant global problem caused by various factors. The sub-themes identified under this theme include: poor contraceptive stock management, theft of contraceptives and budgeting challenges.

### **Sub-theme 1.1: Poor contraceptive stock management**

Some participants noted that there is poor inventory control in the clinics, which makes it difficult for pharmacists to accurately assess their catchment population. This lack of oversight leads to insufficient orders for contraceptives.

*Poor inventory control management that can also lead because it determines like once you have catching up population although sometimes is not a true factor which resulting that will definitely be like you are unable to order what's needed, unable to order according to catching up population you will end up having lesser commodity (P1, male, pharmacist)*

*Due to some nurses or pharmacists not updating their contraceptive stock cards they will end up not knowing their catchment population leading to understocking, in the end you did not budget properly (P4, female, registered nurse)*

### **Sub-theme 1.2: Theft of contraceptives**

In this sub-theme, participants reported that the theft of contraceptives has increased, with some nurses and student nurses stealing them to provide to relatives or to sell in the community. This practice contributes to the scarcity of contraceptives at the clinics.

*Another issue I would consider is theft by students. If students steal the contraceptives provided at the facilities, it will affect the availability of specific family planning contraceptives. Additionally, facility staff might misuse them for personal use, which could also impact availability for patients. (P2, female, assistant pharmacist)*

### **Sub-theme 1.3 Insufficient budget allocations to health facilities**

Some participants explained that inappropriate budgeting at the district level is leading to insufficient deliveries of contraceptives from the suppliers. Additionally, they noted a lack of awareness regarding their catchment population, which further results in inadequate stocks of the commodity.

*One of them could be poor budgeting, when the government or the district is budgeting for the*

*commodities of contraceptives, if the budgeting isn't appropriate, then the availability will be affected. (P2, female, assistant pharmacist)*

*Another factor is the lack of a specific budget for health facilities. For example, during the last therapeutic meeting, the regional pharmacy mentioned that medications were too expensive, and the budget ran out before the end of the financial year. As a result, the supply was reduced because the budget was insufficient. (P5, female, registered nurse)*

## **Theme 2: Contraceptive supply and demand**

This theme encompasses participants' experiences related to the causes of contraceptive stock-outs concerning supply and demand. It highlights issues such as late deliveries, transport challenges, and the preference for certain contraceptives over others as significant contributors to contraceptive stock-outs.

### **Sub-theme 2.1: Delays in deliveries**

Some participants reported that delays in the delivery of contraceptives lead to clinics running out of stock. This situation creates confusion in the community, with some expressing concern that inconsistent supplies could contribute to population growth, in turn leading to an increase in poverty.

*There must be a continuous supply of commodities, and ensuring the uninterrupted availability of these items should be a priority. This must be carefully considered and should be taken into consideration. (P10, female, enrolled nurse)*

### **Sub-theme 2.2: Impact of family planning preferences on contraceptive availability**

In this sub-theme, participants emphasised that certain contraceptives are preferred over others. They indicated that this has led to an increased demand for specific contraceptives, resulting in them being depleted soon after delivery. Meanwhile, other contraceptives remain in the clinics for extended periods without being used.

*Due to a lack of information, patients believe that only certain contraceptives work perfectly, leading to a high demand for specific options, such as Depo. (P13, male, pharmacist)*

### **Theme 3: Recommendations for ensuring regular the supply and availability of contraceptives in the districts**

This theme emerged from participants' responses when asked what could be done to mitigate the factors associated with contraceptive stock-outs. The sub-themes identified include: ensuring a consistent and reliable supply of contraceptives, budgeting, storing contraceptives in lockable cabinets, providing health education to staff and students, and implementing strict access controls to the pharmacy.

#### **Sub-theme 3.1 Ensure a consistent and reliable supply of contraceptives**

Participants indicated that the government should engage reliable and consistent suppliers to ensure the timely delivery of the commodity.

*We need to have suppliers who are reliable and consistent. I think it's important to first conduct a background check on these suppliers before awarding them tenders.* (P5, female, registered nurse)

*I think it would be better if the Ministry of Health hires a reliable and consistent supplier that will improve the stock out because. What we are experiencing here it's like suppliers use to stop supplying for a while we don't know what's happening there.* (P6, female, enrolled nurse)

#### **Sub-theme 3.2 Budgeting**

The participants suggested that the ministry should conduct an audit to assess the ordering processes for all contraceptives. This would make it easier for them to allocate sufficient funds.

*The ministry should audit how orders are managed, visit clinics to check if they match needs, and help facilities review stock levels based on their population to plan budgets better.* (P5, female, registered nurse)

#### **Sub-theme 3.3 Strict control measures to curb contraceptive theft**

Some participants suggested that strict controls should be implemented for individuals assigned to the pharmacy and those entering it. They recommended that only two or three individuals be

allocated to manage the pharmacy to facilitate easier monitoring, with students rotating in shifts of two to three days a week.

*We need strict control measures to prevent contraceptive theft. For example, tracking systems and regular audits could help ensure that supplies are not lost or misused.* (P5, female, registered nurse)

*What we need to do is, we must lock our pharmacy so that no one will enter the pharmacy without permission, I think it would be better for every student nurse to be searched when knocking off because we had an incidence of theft at our clinic* (P3, Female, Enrolled nurse).

## **Discussion**

The aim of this study was to explore the factors associated with contraceptive stock-outs in PHCs in north-eastern Namibia. The findings indicated that poor stock control in the clinics makes it difficult for pharmacists and nurses to accurately assess their catchment population, leading to insufficient orders of the commodity. These findings align with a study done by Kananura *et al.* that emphasised the demand for contraceptives resulting from poor inventory management.<sup>15</sup> In contrast, to the current study findings, the study results from data performance monitoring for action in seven sub-Saharan African countries (Burkina Faso, Ethiopia, Ghana, Kenya, Nigeria, Uganda and Cote d'Ivoire) revealed that contraceptive demand and supply can be understood as tightly integrated factors which are directly affected by local social preferences.<sup>16</sup> Furthermore, the odds of women 's use of modern contraceptives was reported to increase significantly when locally preferred methods are available. Moreover, the pooled data across these countries showed that injectable contraceptives were most preferred by women, denoting that the demand for the preferred contraceptive is a significant measure to inform the ordering process.

A robust health information system is essential for the effective and efficient supply of FP and contraception. Another study done by Atiga *et al.* reported that facilities often do not adhere to the reordering process due to a lack of staff with the technical knowledge necessary for inventory management.<sup>17</sup> Similarly, research by Tumlinson *et al.* suggested that key informants believed that providing inventory management training for

facility staff could significantly reduce contraceptive stockouts.<sup>18</sup> Furthermore, these findings are supported by the results from this study findings in South Africa by Moloko and Ramukumba which pointed to the need to have sufficient skilled healthcare providers who are able to provide comprehensive contraceptive with additional ability of generating accurate and reliable information that can be used to improve service to clients.<sup>19</sup> Hence, the relationship between contraceptive procurement, supply chain management and stockouts has a potential to inform the ongoing debates associated with different contraceptive distribution models in relation to stockouts.<sup>4</sup> Additionally, the study findings Muhoza *et al.* revealed that Burkina Faso and DRC use a decentralized pull system and multiple –low level actors whereby orders are placed from central hubs based on their need forecast.<sup>4</sup> The different circumstantial factors relating to effective and efficient supply of FP and contraception from different countries, suggests the need to tailor context specific efforts of addressing contraceptive stockouts in line with identified challenges.

Study participants reported an increase in the theft of contraceptives, with some nurses and student nurses taking them to give to relatives or to sell in the community. These findings are supported by a study done by Nara *et al.* which highlighted the inconsistent availability of emergency contraception in the Nakivale Refugee Settlement and identified theft by health centre personnel as a significant problem.<sup>20</sup> Akinyemi *et al.* further reported that poor logistics management rendered contraceptive products vulnerable to theft.<sup>21</sup> One key informant explained that injectable contraceptives were often diverted along the logistic chain to private patient medicine stores where they are sold, in contrast to the public sector where they are freely available. Participants also revealed that inappropriate budgeting at the district level results in insufficient contraceptive supplies, with some expressing uncertainty about their catchment populations, leading to inadequate stock levels. These findings are supported by Tumlinson *et al.* who indicated that low stock levels may be indicative of substantial supply chain problems, including poor logistics management information systems, incorrect ordering of stock, poor budget allocation and/or usage, external supply chain issues, commercial market factors, and transport-

related issues.<sup>18</sup> This situation is confirmed by another study conducted in Ethiopia by Kapadia-Kundu *et al.* which revealed that the government fails to allocate sufficient funds for purchasing contraceptives.<sup>22</sup> In contrast, a study conducted in South Africa by Medecins Sans Frontieres found that poor national procurement planning was the main driver of contraceptive stockouts.<sup>23</sup> The study highlighted issues such as reliance on a few international suppliers, budget constraints, and poor stock management systems at the provincial level, leading to frequent shortages of contraceptives.

Participants in this study reported delays in the delivery of contraceptives, resulting in clinics running out of stock. This situation has created confusion within the community, with some expressing concern that a lack of a continuous supply could lead to population growth and increased poverty. These findings align with those of Tumlinson, *et al.*, who emphasised the need to strengthen supply chains to meet the increasing demand for modern contraception and avoid stock-outs caused by transportation delays or procurement failures.<sup>18</sup> Harrison *et al.* also confirmed that contraceptive stock-outs are often caused by delivery delays.<sup>24</sup> In addition, Akinyemi *et al.* identified other challenges that are thought to hinder the scale-up process, including lack of transportation for health workers to reach specific communities and poor logistics management, which negatively affect commodity distribution and availability.<sup>21</sup> In contrast, Olakunde *et al.* investigated the uptake of contraception in sub-Saharan Africa and found that beyond stockouts, key barriers to contraceptive use included myths and misconceptions, fear of surgery, religious beliefs, and male partner disapproval.<sup>25</sup> While stockouts were noted as a supply-side issue, the study emphasized that sociocultural factors played a more dominant role in shaping contraceptive choices.

Moreover, a study conducted by Kraft *et al.* in Tanzania found that when contraceptives were unavailable at nearby facilities, women had to travel long distances or opt for less preferred methods, leading to lower contraceptive uptake and higher risk of unintended pregnancies.<sup>26</sup> The study findings indicated that certain contraceptives are preferred over others, leading to increased demand for products that are quickly depleted on delivery, while others remain in clinics for extended periods.

This observation is supported by Ooms *et al.* who noted that Kenya's public sector did not have a sufficient supply of contraceptive commodities, with more than 80 oral contraceptive options being unavailable due to the preference for certain methods.<sup>27</sup> Similarly, the study findings from data reported from seven countries in sub-Saharan Africa revealed that injectables were most popular among women's preferred contraceptives.<sup>16</sup> Sigdel *et al.* further highlighted that access to sexual and reproductive healthcare extends beyond the availability of contraception, emphasising the importance of education on preferred FP methods.<sup>28</sup>

Furthermore, another study found a high prevalence of stock-outs among a random selection of facilities comprising 10% of all public-sector facilities in Western Kenya. Among the preferred methods that were frequently out of stock, injectables were the most commonly unavailable, despite being the most popular method in Kenya.<sup>16</sup> Participants in the study suggested that the government should hire reliable and consistent suppliers to ensure timely delivery of commodities. This recommendation is supported by Adebayo *et al.* who emphasised the need for a reliable supply or sourcing from external markets. Another study suggested that an increase in the physical distribution of contraceptives is associated with increased availability in public health facilities.<sup>29</sup> The findings of this study revealed that a continuous supply of contraceptives is needed to reduce the number of unplanned pregnancies, which in turn can help lower population growth and combat poverty. This aligns with Tumlinson *et al.* who advocate for commodity redistribution among facilities, allowing those with shortages to source supplies from nearby facilities with surpluses.<sup>18</sup>

Karmacharya *et al.* reinforced this by highlighting the importance of collaboration between the government, local non-governmental organisations and international organisations for the proper and continuous supply of FP commodities.<sup>30</sup> Koffi *et al.* reported that contraceptive stockouts in some countries like India and Nigeria had decreased over time due to improved supply chain management, whereas in other countries like Kenya and the Democratic Republic of Congo, stockouts increased due to structural inefficiencies and growing demand.<sup>3</sup> In contrast, Olakunde *et al.* suggested interventions such as addressing misconceptions, involving male partners in

decision-making, and subsidizing the cost of permanent contraception to increase uptake.<sup>24</sup>

Participants also suggested that the ministry conduct an audit to assess how orders for these commodities are placed. This would facilitate the adequate allocation of funds needed for purchasing sufficient contraceptives. These suggestions echo those of Akinyemi *et al.* who recommended that programme managers and policymakers should improve budgetary provisions for supply chain management in the community-based provision of injectable contraceptives, emphasising the need for budget monitoring for compliance purposes.<sup>21</sup> Ngacha *et al.* further noted that, in the current environment of declining donor funding, it is important for Sub-Saharan African countries to allocate adequate financial resources to ensure the continued availability of FP services while investing in long-term methods.<sup>31</sup> Koffi *et al.* analysed data from multiple African countries which found that stockouts of short-acting contraceptives were common in public health facilities, significantly limiting access to contraception.<sup>3</sup> The study also emphasized the need for continuous tracking and intervention to prevent frequent supply shortages.

Neupane *et al.* also suggested that budget commitments should be multi-year in nature to enable long-term planning based on sustainable cost savings, rather than just the initial cost of providing the services.<sup>32</sup> The budgetary allocation should cover all investments shown to increase the use of long-term contraceptive methods, including training for service providers, diverse and responsive service delivery options, commodity security, equipping of facilities and demand creation efforts. Findings from this study emphasise the need for staff and students to identify who qualifies to receive contraceptives. This suggestion aligns with the research conducted by Comfort *et al.*, which involved on-site training to equip participants with skills in patient-centred counselling and the provision of a full range of contraceptive methods, including condoms for STI prevention.<sup>33</sup> This study findings are also similar with those of Tumlinson *et al.* which primarily focused on short-acting and long-acting reversible contraceptives rather than permanent methods.<sup>18</sup> Moreover, similarly, Krogstad *et al.* highlighted that nurses received health education on the criteria for prescribing contraceptives, ensuring that not just

everyone qualifies, which can help to reduce stock-outs.<sup>34</sup>

Participants also suggested that there should be strict controls over who is allowed access to the pharmacy. This recommendation is in line with Krogstad *et al.*'s findings, which noted that drug losses and theft from the healthcare system are escalating, prompting hospitals to implement safeguards to prevent drug diversion.<sup>34</sup> Another study by Singh *et al.* indicated that healthcare workers may leave drug inventories unsecured, further contributing to the problem.<sup>35</sup> The solution to contraceptive stockouts is thus recommended to adopt a context-specific which may vary based on geographic setting, sector and contraceptive method. In addition, problem-based approaches should be used to address Health Policy Planning and procurement challenges for individual methods. Moreover, these changes should be flexible and cost effective to address fluctuations taking into consideration both contraceptive consumption and stockout rates, in order to sustain and address the unmet needs of contraceptive availability.<sup>4</sup>

## Limitations

**Limited generalisability:** The study used a smaller sample, a total of 16 participants, which may limit the breadth of perspectives. The findings of this study may be specific to the Kavango East region of Namibia, as data were collected only from nurses and pharmacists in this area. Therefore, the findings may not be representative of the entire country or other regions with different contexts and healthcare systems.

**Potential bias:** The use of convenience sampling may have introduced bias, as the participants might not have been fully representative of all nurses and pharmacists working in the region. Additionally, the study's reliance on self-reporting through interviews might have led to social desirability bias, where participants provide responses they perceive to be socially acceptable.

**Lack of triangulation:** The credibility and validity of the findings could be enhanced through the triangulation of data from multiple sources or methods. The study would benefit by incorporating perspectives from doctors, healthcare

administrators and other stakeholders involved in stock management of contraceptives.

## Future recommendations

To ensure a reliable contraceptive supply and uphold the reproductive rights of women and girls in resource constrained settings, the following strategies are recommended for mitigating stockouts of contraceptive. These recommendations are directed towards the government and relevant stakeholders:

The MoHSS should restructure policies governing the contraceptive supply chain to address both demand- and supply-side challenges. These include poor stock management and insufficient budget allocations. Policy adjustments should be informed by an accurate health information system that reflects the contraceptive needs of the catchment population across both public and private sectors. PHC managers should identify and train relevant personnel, including registered nurses and pharmacists, on procurement processes and inventory management of contraceptive commodities. Additionally, comprehensive training should be provided on the full range of FP methods to enable healthcare providers to educate women on suitable contraceptive options, thereby optimising the rational use of available FP commodities in PHC clinics.

Mechanisms should be established to ensure accountability for regional planning errors that contribute to prolonged contraceptive stockouts. Clear oversight structures should be implemented to track performance and responsiveness to contraceptive supply challenges. Adequate and well-defined budgetary provisions should be made to prioritise gender equality, adolescent pregnancy prevention, and reproductive rights. This includes sufficient funding for contraceptive procurement, distribution, and access to safe termination of pregnancy where legally permitted.

The MoHSS should address inefficiencies arising from incompatible and manual data systems used for payments, stock management, and ordering processes. A streamlined, digitalised system should be introduced to enhance coordination and efficiency within and between clinics at the district level.

To address workforce shortages, the government should appoint and train an adequate number of healthcare professionals, including pharmacists and procurement officers. A whole-of-society approach should be adopted to facilitate pharmaceutical training on procurement planning and stock management.

A control system should be introduced for monitoring contraceptive use and forecasting demand. This will ensure efficient and effective delivery of contraceptive commodities aligned with locally preferred methods among women.

PHC managers should implement robust security measures to prevent theft of contraceptives by healthcare workers. This includes strengthening supervision and accountability mechanisms through designated security personnel and responsible PHC managers.

The MoHSS should enhance availability, utilisation, and monitoring of contraceptive across both public and private healthcare sectors. This will ensure that women have access to contraceptive methods on demand, thereby improving reproductive health outcomes.

## Conclusion

The purpose of the study was to assess, describe and explore the factors contributing to the stock-out of contraceptives at PHC clinics in the north-eastern Namibia. The findings indicate that several key issues lead to contraceptive stock-outs, including: 1) poor contraceptive stock management; 2) theft of contraceptives by healthcare workers; 3) insufficient budget allocations; 4) delayed deliveries and 5) contraceptive preferences. These study findings may facilitate improvements in contraceptive stock management in healthcare settings. They can also assist the Ministry of Health and Social Services, along with its agencies, in formulating strategies to mitigate the challenges surrounding contraceptive stock management. Furthermore, the study offers recommendations to ensure the regular availability of contraceptives in the districts, including securing reliable suppliers, ensuring a continuous supply of contraceptives, implementing budget control measures and enforcing strict control of contraceptives to address theft. The implications of this study are significant for policymakers and healthcare providers in Namibia. By identifying the contributing factors

and suggesting strategies for improvement, the study contributes to efforts aimed at enhancing the consistent availability of contraceptives throughout the country.

## Ethical considerations

This study was approved by the University of Namibia Health Research Ethics Committee (HREC) (Ref: SoN 26/2023), as well as the Ministry of Health and Social Services' Research Ethics Committee (MoHSSREC) (Ref: 22/3/1/2). Written consent was provided by all interviewees and the data collected will remain anonymous and confidential.

## Conflict of interest

The authors declare that they have no competing interests.

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## Contribution of authors

The author contributions are as follows: Conceptualisation – DOA; Writing original draft – DOA and AL, Review and editing – DOA and AL, AL and DOA designed the study, developed the tools, and undertook data collection and data analysis. Both authors proofread the manuscript and approved the final version.

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