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Ghanaian Nurse Practitioners' Experiences in Negotiating Antibiotic Prescription Stewardship for Upper Respiratory Tract Infections

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Antibiotic misuse and antimicrobial resistance (AMR) are becoming increasingly serious global health concerns, It necessitates urgent multisectoral action. Although many countries have established antibiotic guidelines, little has been done to investigate nurse practitioners' experiences in negotiating antibiotic prescription stewardship for upper respiratory tract infections.
Aim: To explore Nurse Practitioners' experiences in negotiating antibiotic prescription stewardship for upper respiratory tract infections.
Methods: A semi-structured interview guide was used in this qualitative study. In-depth, face-to-face interviews were held between June 15 and July 22, 2021, with a Purposively sampled 10 nurse practitioners from the Tamale Metropolis. Interviews were recorded on a dictaphone. The recorded interviews were transcribed verbatim and the data were subsequently analyzed using a thematic approach.
Results: Nurse Practitioners' experiences in negotiating antibiotic prescription stewardship for upper respiratory tract infections were classified into five themes: "Antibiotic prescription

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Governance", "Professional Practice", "Reliance on abilities and skills", "Outcomes of Antibiotic prescriptions" and "Expectations"
Conclusion: A better understanding of the nurse practitioners antimicrobial stewardship for Upper respiratory tract infections is needed to inform antimicrobial prescription behaviour and prevent improper antibiotic administration among the nurse practitioners.

Keywords: Nurse practitioners; stewardship; Experience; antibiotics; upper respiratory tract infections; antimicrobial resistance.

1. INTRODUCTION

Upper respiratory tract infections (URTI) are the most common reason for patients visits to the hospital in primary care settings. Viruses, such as (flu, colds, and most coughs), rather than bacteria, are more frequently responsible for these infectious diseases [1,2]. However, almost 70% of patients diagnosed with a URTI received a prescription for an antibiotic.

The misuse and abuse of antibiotics are linked with an increased risk of adverse reactions, higher healthcare costs, and an increase in antibiotic resistance (ABR) [3,4,5,6].

It is projected that 10 million deaths due to antimicrobial resistance (AMR) will arise each year after 2050 [7]. AMR has been named as one of the top ten global public health threats facing humanity by the World Health Organization. The spread of microbes is aided by a lack of clean water and sanitation, as well as inadequate infection prevention and control which is a common situation in developing countries, including Ghana. Some microbes are resistant to antimicrobial treatment [1,2].

Antibiotics should be administered with extreme caution. According to a study, patients who receive antibiotics tailored to individual care needs, at reasonable levels, and at the lowest possible cost to all of them and their general public recovered fast compared to other patients who did not get these tailored made interventions [8,9].

Individual clinician prescribers behaviours are crucial since antibiotic prescription usually necessitates a one-on-one conversation between a patient and a physician [10]. Clinical knowledge and beliefs, according to psychological theories, have an impact on this process [11]. Thus, it can be concluded that a range of factors influences clinical consultation decision-making, including knowledge of the condition, views of the repercussions of prescribing decisions, and patient outcomes.

Nurse practitioners are members of the multidisciplinary health team, as primary care providers their works include consultations at the hospitals or family health clinics, offering general as well as preventative health care to patients, including children and adults. They perform check-ups, treat illnesses, schedule lab tests, and write prescriptions [10].

Although some studies have been conducted to assess students', physicians', and nonphysician prescribers' knowledge of antibiotic resistance in developing countries, few have included nurse practitioners, who make up a sizable portion of prescribers in primary healthcare centres in the Northern Region [12]. This research aims to fill in the gaps by looking into nurse practitioners' experiences with antibiotic prescriptions.

Ghana does indeed have a high rate of AMR, with certain organisms showing multidrug resistance rates of more than 75% [13].

This further highlights the critical need to explore Nurse Practitioners' experiences in negotiating antibiotic prescription stewardship for upper respiratory tract infections in the Ghanaian setting, as these prescribers play a significant role in managing patients with URTIs in primary health care settings [12]. Besides, the government of Ghana is aware of the increasing effects of ABR and also is taking steps to address it. The involvement of nurse practitioners as prescribers in Ghana has been considered a critical agent in minimizing antibiotic resistance therapy [13]. Noteworthy, there isn't much research on nurse practitioners' understanding of ABR in the literature. This study aims to explore Nurse Practitioners' experiences in negotiating antibiotic prescription stewardship for upper respiratory tract infections.

1.1 Aim

To explore Nurse Practitioners' experiences in negotiating antibiotic prescription stewardship for upper respiratory tract infections (URTIs) in the Tamale Metropolis.

1.2 Research Questions

The Interview topics explored were:

1. When dealing with URTI patients, what knowledge do you rely on?
2. What do you think your role is in minimizing antibiotic use and resistance to antimicrobials?
3. Do you have faith in your ability to handle URTI consultations effectively?
4. What are the advantages and disadvantages of not prescribing antibiotics for urinary tract infections (URTIs)?
5. What are your objectives in URTI consultations when it comes to patient management?

2. METHODOLOGY

2.1 Study Sittings

The study was conducted at the Tamale Teaching hospitals in Ghana's Northern Region. The Tamale Teaching Hospital (TTH) is situated at Kukuo, in the eastern portion of the Tamale Metropolis, and covers an area of approximately 490,000 square meters (490,000m^2). The facility, which first opened in 1974, serves as a regional hospital and referral centre for Ghana's three northern regions. The facility was designated as a teaching hospital in 2007, allowing it to perform health professional training. The hospital, which has an 800-bed capacity, is a tertiary healthcare facility that offers a wide range of specialist clinical and educational services. (Adobasom-Anane, 2018). The facility now employs 25 licensed nurse practitioners, according to the Human Resources Department.

2.2 Sample Size Calculation

A Purposive sampling method was used to recruit and interview 10 nurse practitioners who were available, willing to participate and within the inclusion criteria, until a point of saturation.

2.3 Participant's Selection Criteria

All Nurse Practitioners in the Tamale Teaching Hospital were considered for inclusion in the research population, specifically, those who were on duty from June 15 to July 22, 2021.

2.4 Inclusion Criteria

All nurse practitioners in the Tamale Teaching Hospital agreed to take part in the research.

2.5 Exclusion Criteria

Laboratory technicians, radiologists, Doctors and Midwives were excluded.

2.6 Data Collection Process and Method

The Nurse Matron at the hospitals was visited and briefed on the study's objectives; she assisted the research team in advertising the study and provided contact information for potential participants. Participants who agreed to participate were contacted and asked to fill out a consent form. After confirming the participants' consent and eligibility, a convenient date and time for a face-to-face interview were set. All interviews took place in a quiet area/location within the ward and were recorded. Each participant received a GHC 50 honorarium/token for their participation. A semi-structured interview guide used for this study was developed from existing literature on nurse practitioners' experiences in negotiating antibiotic prescription stewardship for upper respiratory tract infections.

To answers the questions set for this current study, an in-depth interview was conducted using a face-to-face means. The first two authors [AY] and [KAT] with an experienced qualitative Supervisor [RNN] conducted the interviews among the purposively sampled participants. The Interviews continued until the point where there were no more new findings (a saturation point), hence the data collection stopped after interviewing the 10th participants.

All authors listen to and replayed the audio several times to ensure that all interviews were fully transcribed. The participants were assigned a [P1]-[P10] to safeguard participants' identity, ensure anonymity and confidentiality.

2.7 Analysis

A thematic analysis methodology based on constant comparison procedures was used to analyze the data. The first interview was coded by AY, after which the second author, KAT and the Supervisor, RNN met to agree on preliminary coded interviews of the principal investigator using the coding frame. Following constant comparisons, all discrepancies and corrections were made and the codes were then categorized into themes. Also, regular Interpretive team meetings were scheduled among the Authors to

evaluate the themes generated and interpret the meaning of the themes generated. Our epistemological position is best described by subtle realism, which holds that we can only know reality through our perceptions. As a result, we set out to conduct a pragmatic study to broaden the NP's understanding of their experiences in negotiating antibiotic prescription stewardship for upper respiratory tract infections and produce recommendations for future research and practice.

2.8 Data Quality Control

The data was gathered by AY in the presence of KAT. RNN, who is well versed in qualitative investigations ensure that in-depth data on Nurse Practitioners' experiences in negotiating antibiotic prescription stewardship for upper respiratory tract infections were collected. After being tested in a pilot study with a nurse practitioner from a different facility, the interview guide was modified. The main study's interviews were taped and saved on a digital voice recorder. For security reasons, we transferred these recordings to our personal computer.

2.9 Rigour and Trustworthiness

We strictly followed the steps involved in the thematic analysis approach to ensure the validity and reliability of our findings. We provided a detailed description of the research methods used, showed the findings arising from the data collected with interview excerpts, which informed the arising themes and interpretations of the findings.

3. RESULTS

3.1 Socio-demographic Characteristics

Ten nurse practitioners were interviewed. The participants were both men and women, with an average age of 37 years and the majority of them between the ages of 33 and 40. The participants all completed their post-secondary education. Furthermore, the participants were BSc Nurse Practitioners with two to ten years of advanced nursing practitioner experience and two to ten years of experience in the current facility. Most began their careers in general nursing practice. Majourity mentioned that they provide an average of 15-minute consultations to each patient and seeing close to 30-40 patients, including patients with URTIs cases per week.

3.2 Nurse Practitioners' Experiences in Negotiating Antibiotic Prescription Stewardship for Upper Respiratory Tract Infections

Table 1 shows the Nurse Practitioners' experiences in negotiating antibiotic prescription stewardship for upper respiratory tract infections. were categorized into five themes: "Antibiotic prescription Governance", "Professional Practice", "Reliance on abilities and skills", "Outcomes of Antibiotic prescriptions" and "Expectations".

Theme 1: Antibiotic prescription Governance

Antibiotic prescription Governance in the study can be interpreted as a set of processes intended at safeguarding the NP antibiotics prescription processes and inherence challenges experiences.

Table 1: Organization of Major Themes and Sub-themes

(Main Themes)	(Codes)
1. Antibiotic prescription Governance	• Infrequent continuous education • Understanding of own prescribing rate • Understanding of AB resistance
2. Professional Practice	• Responsibility for appropriate prescribing
3. Reliance on abilities and skills	• Awareness of abilities and limitations • Communication and examination skills
4. Outcomes of Antibiotic prescriptions	• Antibiotics' health risks and hazards • Risk management • Fear of dissatisfaction • Satisfying expectations and feeling content • Meeting patients demands
5. Expectations	• Safeguarding a reasonable amount of prescribing

3.3 Infrequent Continuous Education

To treat their patients, they had gathered knowledge of how to prescribe effectively from a variety of guidelines, including GHS standard treatment guidelines and the essential drug list. AMR training was provided on occasion, but there was never enough time to attend.

A participant narrated;

> ‘‘*We don't have a lot of external in-service training, but we do have some within our facility. I am occasionally unable to attend them due to the enormous number of patients I need to see. However, I believe that if the Ministry of Health and NGOs can conduct at least a yearly refresher course on antibiotic prescription and antimicrobial resistance, it will greatly enhance antibiotic prescription by nurse practitioners like myself’’(P10).*

3.4 Understanding of Own Prescribing Rate

According to the findings of the study, awareness of one's prescribing rate in comparison to other prescribers, as well as national prescribing levels, has a significant impact on antibiotic prescribing.

> *“Well, I do a follow-up on people I've treated for RTIs to see whether they've healed well if their condition has worsened and if they've returned since this helps you know if you're doing the right thing or not. I also make sure to consult my STG frequently to ensure that I am prescribing correctly” (P7).*

> *“Yes, we have a weekly clinical discussion, more of a training session than a meeting, with the hospital medicine management team, to discuss our antibiotic prescribing and compare it to prescriptions from other institutions in the metropolis. As a result that may have influenced and possibly lowered my antibiotic prescribing’’ (P5).*

3.5 Understanding of AB Resistance

According to the data, the majority of the nurse practitioners were aware of the problem of antibiotic resistance and AMR. They did not, however, have a thorough understanding of the burden and consequences of AMR and antibiotic resistance.

> *“I am a drug guardian, and if I do not prescribe an antibiotic, the drug dispensary will not service the patients, unless they are interested in self-medication and go-to over-the-counter pharmacy stores to get it. Reduced antibiotic consumption will result from my limiting needless antibiotic prescriptions, which will help to prevent antimicrobial resistance” (P3).*

> *“Because I've read a lot of study papers about antibiotic resistance by most patients on researchgate.net. So, if I can confirm that the patient has a self-limiting RTI, I won't prescribe an antibiotic, thereby reducing the risk of the patient developing antimicrobial resistance in the future” (P3).*

> *“I believe that other practitioners, like myself, should take advantage of the internet to keep up to speed on antibiotic use and antimicrobial resistance by visiting sites like Medscape, which they can do at their leisure. This will assist to improve awareness and will have a positive impact on how antibiotics are prescribed” (P6).*

Theme 2: Professional Practice

Professional practice can be defined as a cohesive set of behaviours that displays the personal attributes of the nurse practitioners.

3.6 Responsibility for Appropriate Prescribing

Antibiotic prescriptions were assisted by different facets of the NP role (e.g., time to chat to patients, being up to speed on guidelines, and the strictness of prescribing laws).

Everybody in the team saw themselves as professionally and personally responsible for an appropriate prescription. The majority mentioned that it was their responsibility as antibiotic caretakers to keep patient expectations in check.

> *“As a nurse prescriber, I regard myself as a vital guardian of medications, particularly antibiotics, entrusted to my care. As a result, I always ensure that I conduct accurate clinical assessments and can distinguish between patients who truly require antibiotics for an RTI and those who do not. In this manner, being able to contribute significantly to minimizing the indiscriminate use of antibiotics among those who come to my*

institution for treatment. This will go a long way toward preventing the development of antibiotic resistance among community members who visit my facility" (P10).

"I am the custodian of the pharmaceuticals in the sense that I am the one who prescribes, therefore it is part of my responsibility to be able to control what goes out once the patient is in front of me" (P1).

"So as nurse practitioners we need to adopt a systematic approach towards managing our patients such as trying other empirical treatments before putting them on antibiotics usage. So it is an important part of our job to help limit the usage of antibiotics" (P4).

Theme 3. Reliance on abilities and skills.

Reliance on abilities and skills, in this study, is the recognition of value, skill or capability that the nurse practitioners often put to good use.

3.7 Awareness of Abilities and Limitations

The majority of participants indicated moderate to high confidence in managing and giving antibiotics for RTIs, citing their rigorous training as nurse practitioners and years of experience managing RTIs at their various facilities as sources of their knowledge.

"When I say I have the competence, I mean that I am well-versed in RTIs. I was trained to manage RTIs as part of my nurse practitioner training, which entails that I was taught the current procedures for handling RTI problems by expert doctors throughout my three-year program. As a result, I believe I have sufficient capacity to effectively manage it" (P1).

"With my years of study and training as a nurse practitioner, I believe I have received sufficient instruction to make decisions about whether or not to prescribe antibiotics. In addition, in my few years as a prescriber, I've gained enough expertise to boost my confidence in making decisions about whether or not to prescribe antibiotics" (P3).

Seven of the ten participants also claimed they contact more experienced prescribers or doctors on occasion, and nearly all said they reference the Standard Treatment Guidelines (STG) for help on how to handle a patient whose diagnosis they were unsure about.

"I normally seek a second opinion from a more experienced practitioner or superior if I am unsure about a diagnosis I have made. I may also seek more laboratory investigations to gain a better understanding of the organism that is causing RTI. I also consult my STG frequently for advice on how to treat an RTI for which I am unclear about the diagnosis" (P5).

3.8 Communication and Examination Skills

Almost all participants indicated physical examination and communication skills as being essential to manage the consultation.

"When a patient comes in for an RTI appointment, I usually begin by collecting a comprehensive history from him if he is awake, and then I question him about certain signs and symptoms that may be present but that he was unable to tell me about in his complaints. I also try to figure out if the patient has ever had a similar infection or if there is an underlying medical condition. Then, based on this information, I'll do a comprehensive clinical examination of the patient to get a clinical conclusion on the patient's condition. I'll then request laboratory tests, including sputum culture and sensitivity testing. Then, while I await the results of the laboratory investigations I have requested for the patient, I will begin treatment based on my clinical judgment, particularly if the patient is exhibiting severe signs and symptoms of respiratory distress, and later, when the results of the laboratory examination arrive, I will confirm and make adjustments to my patient management per the results of the laboratory examination" (P8).

The need of mastering these skills through practice was emphasized by all the participants.

Theme 4: Outcomes of Antibiotic prescriptions

Outcomes of antibiotic prescriptions are the admission of the facts of situational consequences of the nurse practitioners' antibiotic prescriptions effects.

3.9 Antibiotics' Health Risks and Hazards

Antibiotic repercussions influenced prescribing decisions. The majority of the practitioners affirmed that antimicrobial resistance is on the rise, and it is being fueled partly by antibiotic overuse.

> *"Antibiotic misuse poses a significant threat because bacteria may evolve resistance to the antibiotic being used. If the bacteria develop resistance, it can lead to major difficulties in the future if it isn't treated properly. I always want to make sure that I'm administering an antibiotic to a patient who needs it as a physician" (P10).*

3.10 Risk Management

According to prescribers, is being cautious about withholding antibiotics while treating patients who are at risk of complications, such as children, the elderly, or those with pre-existing conditions, as well as those with diagnostic uncertainty.

> *"Okay, when deciding whether or not to give an antibiotic to my client, I normally focus on patient characteristics including the intensity and length of symptoms, the patient's age, gender, and the presence of additional co-morbidities like diabetes and HIV. Because older persons, children, and HIV patients have a weakened immune system, failing to administer an antibiotic for them risks exposing them to complications and other opportunistic infections, which could worsen the RTI" (P6).*

> *"Assuming individuals are well but the period of their illnesses has indeed been brief, I would almost always try to persuade them that antibiotics are not required at that time, and for those patients who are difficult to persuade, I frequently use a delayed or postponed prescription and allow them to use their judgment about whether they do need to go on antimicrobials at that moment" (P2).*

3.11 Fear of Dissatisfaction

Prescribers also described occasions in which they felt obligated to prescribe antibiotics for patients because they were concerned the patients would complain if they didn't.

> *"After you've assessed the patient, you may decide that antibiotics aren't necessary. Even if you provide health education and explain the issue to the patient, they will not feel better if antibiotics are not given. So, some antibiotics are provided as placebos, but you know deep down that it's only to make them feel better" (P1).*

3.12 Satisfying Expectations and Feeling Content

All of the participants recounted occasions in which they were forced to provide antibiotics to patients to satisfy patient expectations and satisfaction, with the majority of the participants mentioning patient education as a strategy to manage patient expectations and meet satisfaction.

> *"Some patients arrive in the consultation room with the expectation of being prescribed an antibiotic for their RTI. This could be because the patient was given an antibiotic prescription for the same disease by a different doctor in the past. When individuals arrive with such preconceived views, they may be dissatisfied if I do not prescribe an antibiotic for them because I believe they do not require it. So they may believe I didn't give them an antibiotic because I am a Nurse Practitioner and that a Doctor would have done so. So, to satisfy the patient, I may be required to administer at least one antibiotic" (P2).*

> *"Some patients will understand why I chose not to prescribe an antibiotic for him, but I may need to explain and educate them more on why I made that decision. Sometimes I'll explain to the patient why he doesn't need the antibiotic right now, but that he should keep a close eye on his symptoms and return in three days if they worsen" (P5).*

> *"A lot of people come in with the idea that you, as a prescriber, will give them an antibiotic, and if you don't, they will be unhappy. And in this scenario, you'll have to explain to the patient why you don't think he needs an antibiotic for his condition. Patients will be satisfied if their expectations are met, but if antibiotics are not provided, some patients may become dissatisfied" (P8).*

3.13 Meeting Patients Demands

According to practitioners, antibiotic medications needlessly enhanced patients' perceptions that they were the right treatment and inspired future expectations. Some said they gave antibiotics because prescribers knew if they didn't, the patients wouldn't follow through with the infection treatment options they were offering.

> *"Another prescriber may have seen a patient a week ago, seen that they had a chesty cough, a temperature, and were coughing up something green, and prescribed amoxicillin, with the caveat that if they didn't feel better in a week, they should return. Without a doubt, the patient will return. "Right, I was here last week, I had seen Prescriber X, and he said I have a chest infection, he gave me antibiotics, and he said I should come back if I don't feel better," they say when they return to see me. I'm not doing any better. I'm in urgent need of more powerful antibiotics" (P9).*

> *"…Also, some patients may put pressure on you to prescribe antibiotics for them because they have a history of similar infections in the past that were cured with drugs, and I sometimes have to explain why I am not prescribing antibiotics for them. Some do understand you but with others, you just have to prescribe it for them just as a placebo even though you know they have a viral self-limiting infection. However, what you the Practitioner is doing is reinforcing the belief that if I'm sick, I'll get antibiotics and get better. As a prescriber, it's sometimes difficult to turn around and say you don't need antibiotics at this time." (P7).*

Theme 5: Expectations

Expectations are regarded as the Mental depictions of desired results or situations that the nurse practitioners' desires for their patients with URTIs.

3.14 Safeguarding a Reasonable amount of Prescribing

Prescription at a sufficient rate was a primary goal for many prescribers. Auditing and performance analysis were used as attributes to reduce prescribing, to become the lowest-rate prescriber.

> *"When it comes to prescribing antibiotics for RTIs, I believe I stack up well because my prescriptions frequently provide excellent effects in patients. I've always been aware that my antibiotic prescription is one of the lowest among other prescribers in the hospital during weekly clinical reviews on patient's conditions, where data on prescribing rates of other prescribers is presented" (P2).*

> *"Well, one of my objectives is to prescribe as few antibiotics as possible. This will be accomplished by ensuring that I conduct a thorough examination of my patients' conditions to determine which of them require antibiotics and which are suffering from self-limiting infections that do not require antibiotic treatment. As a result, the ultimate goal is to provide the appropriate antibiotics to the appropriate patients" (P6).*

> *"…I also make sure to consult my STG to ensure that I'm prescribing correctly, and we have a medicine management team that performs a weekly audit of all prescriptions in our facility. Having your medicines management team come around and benchmark you against national standards, benchmark you against your peers, and make you challenge and reflect on your clinical practice is a great way to improve your clinical practice" (P7).*

4. DISCUSSION

Theme 1: Antibiotic prescription Governance

The findings of this study revealed that participants' awareness of current prescribing guidelines and AMR practices had an impact on antibiotic prescribing. The Standard Treatment Guidelines (STG) are documented treatment plans that have been carefully created to assist clinicians in selecting the best therapies for certain clinical problems. Since 1983, Ghana's Ministry of Health has published a list of important pharmaceuticals along with therapeutic guidelines to aid in the sensible use of medicines in the country [14].

According to our findings, even though many prescribers had the STG, there was a low level of adherence to the guidelines due to context-related restrictions. These hurdles include a lack of specific medications, a high number of patients showing up, and a hectic schedule that

causes them to write prescriptions without referring to or studying the guideline.

These findings are per those of other studies, in which healthcare personnel cited the non-availability of specific medications and high patient turn-up as reasons for their inability to follow treatment standards. Prescribers frequently prescribe improperly due to a lack of adherence to accepted treatment recommendations. Similarly, prescriber adherence to conventional treatment standards was shown to be insufficient in research from Ghana [14].The most likely reason for this low adherence being limited access and low utilization of the STG. This finding was supported by a study conducted in the United Kingdom, which found that being aware of one's prescribing rate in comparison to that of other prescribers and national prescribing levels was a critical factor influencing nurse prescribers' prescribing behaviour [15,6].

In a related study, some prescribers, particularly those with typical fluoroquinolone prescribing practices, expressed dissatisfaction with the insufficient information they had on antimicrobial resistance from their training as practitioners. They recommended that getting constant updates on antimicrobial resistance in their practice population from their microbiological colleagues would help them make more informed decisions about which drugs to prescribe for patients.

The system requires to be updated and so that directed education on antibiotic prescription Governance **is** enhanced.

Theme 2: Professional Practice

Another interesting finding that was realized in this current study was that antibiotic prescribing was supported by the foundations of the NP practice role. To moderate patient expectations, some people mentioned their role as antibiotic guardians. This was a positive finding because prescribers who recognize their role in preventing antibiotic overuse and, as a result, antibiotic resistance will be able to take proactive measures such as conducting proper assessments and exercising sound clinical judgment, which will result in the appropriate prescription of antibiotics in the facility where they work [16,17]. Nurse practitioners who accepted their duty as antibiotic guardians were also more likely to follow the STG guidelines while treating patients with RTIs and also see antimicrobial stewardship as a core responsibility of their practice. To manage patient expectations, most participants mentioned their duty as antibiotic guardians. To promote this professionalism in the hospital, administrators should institute routine reward systems to appreciate prescribers who identify themselves as antibiotic guardians to encourage others to prescribe antibiotics appropriately.

Theme 3. Reliance on abilities and skills

Physical examination and communication skills were among the skills mentioned by almost all the participants as being required to manage RTI consultations. During this study, it was discovered that the majority of nurse practitioners regarded effective communication with patients as an important skill for diagnosing and relaying management decisions to patients. As a result, a prescriber with good communication skills is more likely to gain the trust of the patient and thus obtain a more accurate clinical judgment and patient compliance with treatment decisions. Furthermore, the current study agreed that adequate physical examination skills are crucial in making an accurate diagnosis and managing a patient with RTI and that failing to do so will result in misdiagnosis and incorrect antibiotic prescriptions. The current findings are comparable to those of Rowbotham et al., [18], which stated that physical examination errors are an avoidable source of medical errors, and failure to perform the right examination is the leading cause of adverse outcomes. Antimicrobial stewardship training should therefore focus on effective training of nurse practitioners in proper physical examination techniques and communication skills to assist them in doing the right thing in their practice.

Theme 4: Outcomes of Antibiotic prescriptions

Many prescribers define managing risk' as being cautious about withholding antibiotics while treating patients who are at risk of complications, such as children, the elderly, or those with pre-existing diseases, as well as those who have diagnostic uncertainty due to a language barrier. In these situations, they were more likely to prescribe antibiotics. Antibiotics are frequently prescribed to reduce the risk of URTI complications, even when no laboratory tests or clinical signs point to their use, because children, the elderly, and patients with prior medical conditions have lower immunity to URTIs.

This finding was supported by a study conducted in Cameroon, in which prescribers identified patient characteristics such as poor socioeconomic position, age, and co-morbidity as factors that influence or predict antibiotic prescribing [19].

This study's findings were also similar to those of a Nepalese study, which found that diagnostic uncertainty makes it difficult to determine whether an infection is viral or bacterial in the early stages, especially in the case of upper respiratory tract infections and diarrhoeas. As a result, antibiotics are frequently prescribed even when they are not required [20]. Thus, Appropriate screening and training of interpreters are required to achieve best-practice standards in interpretation.

Theme 5: Expectations

Setting goals with patients might help bring patient preferences to the forefront of the conversation. Goal setting is based on an understanding of patients' objectives and preferences, and it includes communicating realistic health and wellness goals [21,20,3,4,22,23,24].

It is part of medicine's ancient heritage of hearing, understanding, and bearing witness [25], and it provides one mechanism for enacting patient-centred communication in consultations. If the patient's health deteriorates, it may help the prescriber evaluate which treatments are most useful to the patient. The findings from this current study demonstrated that most participants set goals for themselves in terms of treating RTIs in their patients, which has a beneficial impact on their prescribing decisions because prescribing the fewest antibiotics possible in comparison to their colleagues was a priority for the majority of them. The study showed that, for several of the prescribers, prescribing at an adequate rate was a top priority. Auditing and benchmarking were utilized as incentives to minimize prescribing, creating a race to be the lowest-rate prescriber. Many nurse practitioners are now paying close attention to the number of antibiotics they administer to their patients in their practice, which may assist to decrease unnecessary antibiotic prescribing at the hospitals where they work [26,16,5,13,27,8,9,6]. As a result, the Ministry of Health must conduct frequent antimicrobial training exercises and provide appropriate information on the prevalence of antibiotic resistance in the areas where they operate to prescribers to promote this positive attitude.

5. CONCLUSION

The study was conducted to examine nurse practitioners' experiences in negotiating antibiotic prescription stewardship for upper respiratory tract infections. The findings showed that NP experiences: “Antibiotic prescription Governance”, “Professional Practice”, “Reliance on abilities and skills”, “Outcomes of Antibiotic prescriptions” and “Expectations”. These findings must be used to inform interventions that will help these groups prescribe appropriately. Measures are thus urgently needed to lessen ABR's huge burden. Interventions approaches such as training for practitioners and users are urgently needed.

6. LIMITATIONS

The opinions of study participants may not be representative of those of non-participating practitioners. also, the interview setting may have influenced participant responses. Lastly, the study's applicability may be limited to only settings with similar contexts such as Ghana.

7. RECOMMENDATIONS

Following this study, it is recommended that other professionals who prescribe antibiotics for URTIs, such as pharmacists and general practitioners, be interviewed. It could also be essential to explore patient perspectives and experiences with URTI treatments in hospitals, along with patient satisfaction with the treatment received. This study suggests that current interventions should be tailored and tested in different settings. It is believed that these recommendations will equip NPs with the tools they need to manage differing perspectives of their patients.

CONSENT

The respondents (Nurse Practitioners) were asked for permission and informed that their answers would be kept confidential. The questionnaire did not include any information about the respondents' identities, such as their names, to ensure their anonymity.

ETHICAL APPROVAL

The Kwame Nkrumah University of Science and Technology's Committee on Human Research, Publication and Ethics (CHRPE) granted ethical permission (CHRPE/AP/318/21). The Tamale Teaching Hospital's research department granted permission to conduct the study before the interviews (TTH/R&D/SR/059), and hospital officials agreed.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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