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RESEARCH ARTICLE

# Management of uncomplicated gastric ulcer in community pharmacy: a pseudo-patient study

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## Abstract

*Background* Increasing role of community pharmacists sometimes demands the diagnoses of minor ailments using appropriate questioning skills and recommendation of over-the-counter medications to patients seeking self-care. *Objective* To evaluate community pharmacists' questioning and diagnostic skills of minor ailment complaints, and the appropriateness of medication(s) recommendations made. *Setting* One hundred and thirty-one community pharmacies in Ibadan, Nigeria. *Method* A cross-sectional survey employing pseudo-patient study method. The pseudo-patient visited 131 community pharmacies from June 2017 to January 2018 and complained of stomach ache. The conversation between the pharmacists and pseudo-patient were audio-taped and transcribed verbatim. Two criteria were used to evaluate the questioning skill of the community pharmacists. One of the criteria was developed by a six-membered panel and had 13 questions while the other contained five questions:—Who is it for? What are the symptoms? How long have the symptoms been present? Action taken? and Medication used.? Questioning skill of the community pharmacists was classified based on the median scores of these two criteria as: poor, moderate and optimal. The diagnoses made by the community pharmacists from the pseudo-patients complaints were compared with the expected diagnosis of uncomplicated gastric ulcer caused by the use of ibuprofen. Recommendations for the pseudo-patients minor ailment were also compared with the Nigeria standard treatment guideline. *Main outcome measure* Pharmacists' questioning skill, types of diagnosis made and appropriateness of medications recommended. *Results* The median scores for the questioning skill criterion containing 5 and 13 questions were 2 and 4, respectively; showing poor questioning skill. Differential diagnoses of gastric ulcer, dyspepsia, gastroesophageal reflux, and hyperacidity were made by 92 (67.4%) pharmacists but 3 (2.3%) correctly diagnosed the pseudo-patients' minor ailment as uncomplicated gastric ulcer caused by short-term use of ibuprofen. Antacids were recommended in line with the standard treatment guideline by 46 (35.7%) pharmacists while proton pump inhibitors were recommended by 6 (4.7%) pharmacists. None advised the withdrawal of the provocative factor according to the treatment guideline. *Conclusion* The questioning skill of the community pharmacists in this setting was poor. Few community pharmacists diagnosed the pseudo-patients' minor ailment correctly. Also, recommendations were mostly inappropriate compared with the standard treatment guideline.

**Keywords** Gastric ulcer · Minor illness · Mystery shopper · Nigeria · Pharmacist · Pseudo-patient · Self-care

## Impacts on practice

- There is a need to include courses on questioning skills in the Mandatory Continuing Professional Development Training program for community pharmacists in Ibadan, Nigeria to improve service provision.
- Community pharmacists need to improve their diagnostic skill of minor ailments in order to provide adequate services to patients seeking self-care.
- Community pharmacists need to be up-to-date with current treatment guidelines in order to provide appropriate

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recommendations of over-the-counter medications to patients with minor ailments.

## Introduction

Community pharmacies are strategically placed and are usually the first places patients with minor ailment in Nigeria visit, unlike proprietary and patent medicine vendors. Community pharmacists play significant roles in recognizing minor ailments, making appropriate recommendations, and referrals where needed [1, 2]. To make a definitive diagnosis of a minor ailment, pharmacists employ their knowledge of questioning skill, communication skill, recognizing signs and symptoms of the minor ailment, pharmacotherapy and treatment guidelines [3–7].

Several methods have been employed to improve the questioning and communication skills of community pharmacists. One of them is the use of pseudo-patients to augment healthcare practices [8]. Pseudo-patients are also referred to as mystery patients, surrogate shoppers or clients, undercover care seekers, mystery shoppers, standardized patients, and simulated patients in the literature. A pseudo-patient is an individual trained to act like a real patient [9]. This model is used to evaluate the performance of pharmacists and pharmacy staff [9]. The advantages of using the pseudo-patients model in evaluating performance include standardization, adaptability, availability, flexibility, and feedback [9, 10]. When pseudo-patients visit a pharmacy, they are not distinguishable from other patients. They may make a request for a product or present symptoms to either the pharmacist or pharmacy staff. Usually, the conversation is audio-taped or a standardized score sheet is used to evaluate performance. Sometimes, feedback is given immediately [11, 12].

The increase in worldwide sales of over-the-counter (OTC) medicines is driven by government policies encouraging self-care and self-medication, and deregulation of some prescription-only medicines to OTC medicines. This has placed greater demand on community pharmacists to provide OTC medicines for minor ailments when patients need to engage in self-care [13, 14]. With more potent drugs at the disposal of pharmacists, they must be able to diagnose minor ailments and give the right advice and recommendations when patients seek treatment for minor ailments [15, 16]. Several studies have looked at pharmacists' ability to diagnose minor ailments, like headache [17], childhood diarrhea [18], asthma [19], insomnia [20], primary dysmenorrhea [21], and sexually transmitted diseases [22, 23]. This diagnostic ability has been called to question in various quarters [24–26]. Others have looked at the questioning skill and the type of advice given by community pharmacists. The outcome of these studies varied: some findings were positive [27–29], other dissenting results were from within [19, 24, 30, 31] and without [32, 33] the pharmacy profession. Generally, these studies failed to focus on the appropriateness and adequacy of the questions asked by the community pharmacists and whether accurate diagnoses were reached and appropriate recommendations were provided by the pharmacists.

## Aim of the study

This study evaluated community pharmacists' questioning and diagnostic skills, and the appropriateness of medication recommendations for a pseudo-patient's minor ailment.

## Ethics approval

The study protocol was approved by the University of Ibadan/ University College Hospital Ethics Committee, with approval number UI/EC/17/0247. The study was conducted in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki and its later amendments [34].

## Methods

### Study setting, design and sample size

This was a cross-sectional study employing the use of a pseudo-patient. The study was carried out in Ibadan metropolis from June 2017 to January 2018. The participants were pharmacists working in registered pharmacies either full time or as locum pharmacists. The required sample size was determined from the 194 registered community pharmacies on the Pharmacists Council of Nigeria 2016 Register at 5% confidence interval and 95% confidence limit, using a calculator [35]. Ten per cent non-response rate was added to the calculated sample size of 129 to obtain a total sample size of 142.

## Sampling method, inclusion and exclusion criteria

Convenience and snowballing sampling methods were used to select the participants. They were included in the study on the ground that they gave written informed consent, were the superintendent pharmacists or locum pharmacists with a minimum of two years of post-graduation experience. Pharmacists of both genders were included. However, non-pharmacists, interns or pharmacists in the one-year mandatory National Youth Service Corp (NYSC) program, pharmacists who declined to give informed consent and pharmacy staff

were excluded. One pharmacist was selected per community pharmacy.

## Pseudo-patient scenario and other study instruments

The minor ailment chosen for this study was uncomplicated gastric ulcer due to short-term use of Ibuprofen, a non-steroidal anti-inflammatory drug (NSAID). This was chosen to be presented by the pseudo-patient (a 21-year-old female) at the pharmacies because of the preponderance of indiscriminate use of NSAIDs resulting in the common symptom of stomach ache or epigastric discomfort [36]. A pilot study was conducted in five pharmacies that were not included in the study sample. The results of the pilot study facilitated the modification of anticipated questions from pharmacists and how the pseudo-patient should respond. Data obtained from the pilot study were not used in the final data analysis. Prior to visiting the pharmacies each week, the pseudo-patient went through a series of role-play mock presentations of the scenario with an experienced community pharmacist and a Clinical Pharmacy lecturer to standardize` the scenario and guide the pseudo-patient on how to respond to the pharmacist's questions.

The pseudo-patient made an unscheduled visit to each pharmacy and requested to see the pharmacist. Once the pharmacists' attention was obtained, the pseudo-patient asked the question: "What do you have for stomach ache?" The pseudo-patient conversed with the pharmacist in a layman's language to avoid suspicion on the part of the pharmacist. Depending on the questions and clarification that the pharmacist asked for, the pseudo-patient responded appropriately using a previously designed guideline (Table 1). The conversation between the pharmacist and the pseudo-patient was audio-taped to prevent recall bias. Pharmacists' consent for the audio-recording was obtained. After the dialogue between the pharmacist and the pseudo-patient, the pseudo-patient identified herself and administered a semi-structured questionnaire to the pharmacist. The first section of the questionnaire contained questions on demographic characteristics of the participants and the second section asked the following questions: What was your diagnosis for the pseudo-patient's complaints? What informed your conclusion? What was your recommendation? And why did you refer the patient? The self-administered semi-structured questionnaire was developed by the authors and vetted by three other Clinical Pharmacy lecturers for content validity. The face validity of the questionnaire was ascertained during the pilot study.

**Table 1** Pseudo-patient guide on the possible questions the pharmacists may ask and how to respond

| A 21-year old female walked into a community pharmacy and asked the pharmacists: 'What drug do you have for stomach pain?' |
|---|
| When asked about how long the pain had been, she answered: 'The pain has been on for about 3 weeks' |
| When asked about any medication she had taken, she answered: 'I have taken Hyoscine N-butyl bromide (Buscopan) tablets' |
| When asked about other medications, she answered: 'I have been using ibuprofen recommended by my roommate for my leg pain for about 2 weeks' |
| When asked about how she had been using the drugs, she answered: 'I took one tablet of Ibuprofen morning and night and two tablets of Hyoscine N-butyl bromide (Buscopan) morning and night' |
| When asked if the ibuprofen was taken before or after a meal, she answered: 'before meal' |
| When asked about the presence of fever, diarrhea, nausea or vomiting, she answered: 'No fever, no diarrhea, no vomiting or nausea' |
| When asked about the presence of a headache, she answered: "No headache' |
| When asked about the time the stomach pain occurs, she answered: 'The stomach pain comes up with eating and so I have been avoiding eating' |
| When asked about how long the pain lasts, she answered: 'I don't really know' |
| When asked on what time of the day that the pain occurs, she answered: "It occurs mostly after eating and it takes a while before it stops' |
| When asked about any change in her weight, she answered: 'My roommate told me I have lost a little weight' |
| When asked of abdominal pain, she answered: 'Yes' |
| When asked to point to the location of the pain, she pointed to the epigastric region |
| When asked of occurrence of the pain in the night, she answered: 'No pain in the night' |
| When asked of occurrence of burning sensation in the stomach, she answered:'Yes, I do have burning sensation in my stomach region' |
| When asked of the occurrence of coughing, she answered: 'No coughing' |
| When asked on the presence of fever, she answered: 'No fever' |
| When asked the last time she was treated for malaria, she answered: 'I was treated for malaria last week with Lonart® (Arthemeter + Lumefantrine) |
| When asked if she was menstruating, she answered: 'No' |
| When asked when her last menstruation was, she answered: 'Two weeks ago' |
| When asked of the occurrence of stomach ache during menstruation, she answered: 'only the first day' |

**Table 2** List of questions pharmacists should have asked as suggested by the panel of experts

| S/no. | Questions pharmacists should ask |
|---|---|
| 1 | Who has stomach ache? |
| 2 | What are the other symptoms? |
| 3 | How long has the pain been present? |
| 4 | How long does the pain last? |
| 5 | What medication has been used? |
| 6 | In which part of the stomach do you feel the pain? |
| 7 | What medication is being used? |
| 8 | Is it menstrual cramps? |
| 9 | Is the pain like a burning sensation? |
| 10 | Does the pain occur at any particular time of the day? |
| 11 | Does food relieve the pain? |
| 12 | Any specific trigger of the stomach pain? |
| 13 | Any relief with the medication? |

**Table 3** Community pharmacists' category of questioning skill

| Category of questioning skill | WWHAM median score | EPRQs median score |
|---|---|---|
| Poor questioning skill | 0–2 | 0–5 |
| Moderate questioning skill | 3–4 | 6–10 |
| Optimal questioning skill | 5 | 11–13 |

Expert Panels' Relevant Questions (EPRQs)

The questioning skill of the pharmacists was evaluated using two criteria: WWHAM mnemonics [37] and a set of more robust questions the pharmacists should ask the pseudo-patient during the pharmaceutical consultation. The other criterion was developed by a six-member panel of four Clinical Pharmacy lecturers with community pharmacy experience and two general practice physicians. Each member was given the case scenario and asked to suggest relevant questions the pharmacists should ask to arrive at the right diagnosis for the pseudo-patient's ailment. The suggested questions were pooled and sent back to the panel members to select appropriate questions independently. A consensus of $\geq 65\%$ among the panel members (approximately 4/6 members) was used to select the relevant questions. Questions below this threshold were excluded. Based on this, thirteen questions were considered relevant (Table 2). To categorise the number of relevant questions the pharmacist might ask into poor, moderate, or optimal questioning skill, the panel members were subsequently asked to determine the cut-off points. The consensus cut-off points for the number of EPRQs (Expert Panels' Relevant Questions) corresponding to each category of questioning skill as median scores are shown in Table 3.

The *aide-memoire* WWHAM (**W**ho is it for? **W**hat are the symptoms? **H**ow long have the symptoms been present? **A**ction taken? **M**edication used?) is a questioning framework introduced in the late 1900s to assist pharmacists and medicine counter assistants in asking appropriate questions during minor ailment consultations [37, 38]. The pseudo-patient scenario presented in this study required the pharmacist to ask the five questions in the WWHAM mnemonic to make correct diagnosis of the pseudo-patient's ailment. However, pharmacists do not usually exhaust all the questions in WWHAM [39, 40]. The authors, therefore, categorised pharmacists' questioning skill as poor, moderate, or optimal based on the number of WWHAM questions asked. The cut-off point for each category is shown in Table 3.

The conversation between each pharmacist and the pseudo-patient was transcribed verbatim. The number of EPRQs and WWHAM questions asked by the pharmacists were identified by the two authors independently. Where there were discrepancies, this was settled by consensus.

## Data analysis

Descriptive statistics, such as frequency counts, percentages, mean ± standard deviation and median, were used to summarize the data. Non-violation of the assumptions of linearity, normality, and homoscedasticity were investigated through preliminary analysis prior to the determination of the correlation between the WWHAM and EPRQs scores with Pearson product-moment correlation coefficient. Association between gender and the pharmacists' questioning skill criteria scores (WWHAM and EPRQs scores) was assessed with Mann Whitney U Test. The analysis was performed with Statistical Package for Social Sciences (SPSS) for Windows version 25 (IBM Corp, New York, NY, USA). Level of significance was set at $p < 0.05$.

## Results

One hundred and thirty-one community pharmacists participated in the study. Three pharmacists declined further participation after giving informed consent by not filling the self-administered questionnaire. The recorded dialogues of these pharmacists were not included in the analysis. Another eight pharmacists were not available when the pseudo-patient visited the pharmacies. Out of the 131 pharmacists visited, 83 (63.8%) were male, 80 (61.5%) were married and 95 (73.6%) had practiced in other areas of pharmacy prior to the study. A total of 78 (60.5%) of the pharmacists had practiced in the hospital setting, 11 (8.5%) in the administrative setting, 37 (28.7%) in industry, and 2 (1.5%) in academia. Mean post-NYSC period of practice was 8.73 ± 10.18 years (range 1–44 years) and the mean community pharmacy practice

experience was 6.34 ± 7.44 years (range 0.5–38 years). Twenty-four (18.6%) pharmacists have Master of Pharmacy degree or Fellowship of the West African Postgraduate College of Pharmacists degree, while 2 (1.5%) of the respondents had other non-Pharmacy-related postgraduate degrees. Sixteen community pharmacists (12.4%) were undergoing a Master of Pharmacy degree program at the time of the study.

Seventy-seven (59.7%) pharmacists identified the pseudo-patient's ailment as peptic ulcer disease, others diagnosed stomach muscle spasm—17 (13.2%), undefined infection—8 (6.2%), hyperacidity—6 (4.6%), and worm infestation—5 (3.9%). Other diagnoses made included gastroesophageal reflux, GERD, 5 (3.9%); dyspepsia, 4 (3.1%); NSAID-induced gastric ulcer, 3 (2.3%); gastroenteritis, 2 (1.5%); pre-menstrual syndrome, 2 (1.5%); pelvic inflammatory disease, 1 (0.8%); and typhoid fever, 1 (0.8%). The reasons given for these diagnoses included persistent stomach pain, 73 (56.6%); the position of pain, epigastrium, 29 (22.5%); and the use of NSAID, 14 (10.9%). Other reasons are shown in Table 4. Based on individual pharmacist's diagnosis of the pseudo-patient's minor ailment, various recommendations were made and these are listed in Table 5. Notably, antacids—46 (35.7%) and proton pump inhibitors with antacids—23 (17.8%) were the most recommended.

The number of questions asked in line with the WWHAM mnemonic and the EPRQs is displayed in Table 6. Forty-nine pharmacists (37.4%) asked two WWHAM questions, while 50 (38.2%) pharmacists asked three out of the five WWHAM questions during the pharmacist and pseudo-patient dialogue. The question "What are the symptoms?" had the highest frequency of 127 (96.9%). Most of the pharmacists 115 (87.8%) did not ask who needed the medication (Table 7). The highest number of EPRQs asked by the community pharmacists was eight out of the possible number 13. Twenty-nine pharmacists (22.1%) asked five questions while 28 community pharmacists (21.4%) asked three relevant questions (Table 6). The specific types of questions asked by the pharmacists based on the WWHAM mnemonic and the EPRQs are shown in Tables 7 and 8, respectively.

**Table 4** Pharmacists' reasons for reaching a diagnosis of pseudo-patients minor illness (n = 131)

| Reasons | Frequency (%) |
|---|---|
| Persistent stomach pain* | 73 (56.6) |
| Position of pain (epigastrium)* | 29 (22.5) |
| Short term use of NSAID* | 14 (10.9) |
| Burning sensation* | 14 (10.9) |
| Food aggravated symptoms | 15 (11.5) |
| "Experienced cases like this" | 2 (1.5) |
| No history of ulcer** | 1 (0.8) |

*n = 129, **n = 130

Median WWHAM and EPRQs scores for the community pharmacists were 2 and 4, respectively. According to the WWHAM mnemonic median score classification, 71 (54.2%) had poor questioning skill, 59 (45.0%) had moderate questioning skill and 1 (0.8%) had optimal questioning skill. No community pharmacists had optimal questioning skill based on the number of EPRQs. One hundred and four (79.4%) pharmacists displayed poor questioning skill, while 27 (20.6%) had moderate questioning skill. There was a strong positive correlation between WWHAM score and EPRQs score ($r = 0.751$, $p < 0.001$), with high WWHAM scores associated with high EPRQs scores. No statistically significant difference in the distribution of WWHAM scores ($p = 0.266$) and EPRQs scores ($p = 0.419$) between male and female community pharmacists. The consultation time ranged from 20 to 785 s, with a mean of 163.65 ± 101.63 s per encounter.

## Discussion

The Royal Pharmaceutical Society of Great Britain recommended standard practice for the sale of medicines by pharmacists, stating that "pharmacists must obtain sufficient information on the patient's symptoms so as to make an informed decision on the correct product to be recommended" [41]. Therefore, pharmacists must ask relevant questions. Several studies used mnemonics like WWHAM, ASMETTHOD, SIT DOWN SIR or ENCORE to evaluate pharmacists' questioning skills [40]. In this study, WWHAM and EPRQs were used because of the nature of the pseudo-patient scenario. More relevant questions need to be asked to arrive at the right diagnosis and make an appropriate recommendation in line with the standard treatment guideline (STG).

The findings of this study, in agreement with others, showed that community pharmacists do not ask enough questions to make correct diagnosis [21, 30, 42]. Generally, the questioning skill of the community pharmacists in this study was poor, judging by the median scores for the two criteria used (WWHAM and EPRQs). The majority of the questions asked by the pharmacists were related to the identification of symptoms, their locations, and duration. Three studies reported similar findings with pseudo-patient scenarios of headache or abdominal pain [24], dysmenorrhea [21] and dyspepsia [43]. More than three-quarter of the pharmacists asked these essential questions. However, identifying the symptoms, their locations and duration may not be sufficient to identify the primary cause of a minor ailment as was the case with the pseudo-patient in this study. As suggested by Rutter et al. [24], inadequate pharmaceutical consultation time, physical barriers, communication skill

**Table 5** Recommendations of pharmacists for the pseudo-patient's illness

| Recommendations | Frequency (%) |
|---|---|
| Antacid | 46 (35.7) |
| PPI + Antacid | 23 (17.8) |
| Buscopan | 19 (14.7) |
| Drotaverine | 8 (6.1) |
| Ciprofloxacin + Tinidazole | 7 (5.4) |
| Amoxicillin | 7 (5.3) |
| Proton pump inhibitor (PPI) | 6 (4.7) |
| Omeprazole + Clarithromycin + Amoxicillin | 5 (3.8) |
| Worm expellant | 5 (3.8) |
| NSAIDs | 4 (3.1) |
| Omeprazole + Clarithromycin + Tinidazole + Antacid | 4 (3.1) |
| Further investigation | 4 (3.1) |
| Omeprazole + Amoxicillin + Metronidazole + Antacid | 3 (2.3) |
| Omeprazole + Buscopan + Tinidazole + Clarithromycin | 3 (2.3) |
| Amoxicillin + PPI + Antacid | 2 (1.5) |
| Omeprazole + Tinidazole + Antacid | 2 (1.5) |
| Buscopan + Cimetidine + Antacid | 2 (1.5) |
| Ofloxacin + Ornidazole | 2 (1.5) |
| Ibuprofen + Antacid | 2 (1.5) |
| Antacid + Amoxicillin + Metronidazole + Cimetidine | 2 (1.5) |
| Cimetidine | 2 (1.5) |
| Mebeverine | 1 (0.8) |
| Omeprazole + Clarithromycin + Mebeverine | 1 (0.8) |
| Omeprazole + Ciprofloxacin + Tinidazole + Buscopan | 1 (0.8) |
| Metronidazole | 1 (0.8) |
| Antacid + Buscopan + Amoxicillin | 1 (0.8) |
| Metronidazole + Fluconazole + Doxycycline + Ciprofloxacin | 1 (0.8) |
| Misoprostol + Antacid + PPI | 1 (0.8) |
| Antacid + Worm expellant | 1 (0.8) |

*PPI* proton pump inhibitor, *NSAID* Non-steroidal anti-inflammatory drugs, Buscopan® (Hyoscine N butyl bromide)

of both patient and pharmacist may affect the adequacy of the questions asked by the pharmacist.

As a result of poor questioning skill, more than one-third of the pharmacists gave wrong diagnoses of muscle spasm, infections, worm infestations, pelvic inflammatory disease and typhoid fever for the pseudo-patient's ailment. However, more than half of the pharmacists gave differential diagnoses of peptic ulcer, gastroesophageal reflux disease, dyspepsia, or hyperacidity without asking adequate questions. The reason may not be unconnected with the stereotypic nature of some pharmacists, which sometimes makes them jump to conclusions of minor ailment diagnosis without finding out the cause [43]. Akhtar and Rutter stated that, when pharmacists ask questions, they seldom give thought to their questions [43] and the phrasing of diagnostic questions rarely gives rise to follow-up questions [43]. Diagnostic reasoning behavior of pharmacists is linked with poor knowledge [43]. Although most of the pharmacists were able to give close differential diagnoses, the inability to pinpoint the exact cause may give room to wrong, inappropriate or inadequate treatment and counseling of the patient. The effect may be worsening of the symptom or the development of complication and subsequent hospitalization.

The WWHAM type of questions promotes data collection but does not take accurate history, facilitate diagnosis, and appropriate recommendations [43, 44]. This was the reason the EPRQs model was added to evaluate the questioning skill of the community pharmacists. Approximately 2% of the pharmacists were able to identify the pseudo-patient's minor ailment as uncomplicated gastric ulcer due to short-term use of Ibuprofen. These pharmacists were able to ask more questions related to medication history, such as: What medications have been used? And what medication(s) is/are been used? They were also able to ask questions that narrowed down the cause of the patient's minor ailment. These included: Does food relieve the pain? Is the pain like a

**Table 6** The number of WWHAM questions and EPRQs asked by the community pharmacists during the pseudo-patient-pharmacist dialogue

| Number of questions asked | WWHAM questions* n (%) | EPRQs* n (%) |
|---|---|---|
| 0 | 2 (1.5) | 2 (1.5) |
| 1 | 20 (15.3) | 10 (7.6) |
| 2 | 49 (37.4) | 12 (9.2) |
| 3 | 50 (38.2) | 28 (21.4) |
| 4 | 9 (6.9) | 23 (17.6) |
| 5 | 1 (0.8) | 29 (22.1) |
| 6 | | 16 (12.2) |
| 7 | | 10 (7.6) |
| 8 | | 1 (0.8) |
| 9 | | 0 (0) |
| 10 | | 0 (0) |
| 11 | | 0 (0) |
| 12 | | 0 (0) |
| 13 | | 0 (0) |

*Total number of WWHAM questions is 5 and number of Expert Panels' Relevant Questions (EPRQs) is 13

**Table 7** Type of questions asked by community pharmacists from the WWHAM mnemonic

| WWHAM | Asked n (%) | Failed to ask n (%) |
|---|---|---|
| What are the symptoms? | 127 (96.9) | 4 (3.1) |
| How long has it been? | 99 (75.6) | 31 (23.7) |
| Actions taken? | 62 (47.3) | 69 (52.7) |
| Who is it for? | 16 (12.2) | 115 (87.8) |
| Medications being used? | 5 (3.8) | 126 (96.2) |

burning sensation? Any specific trigger of the stomach pain? And does the pain occur at any particular time of the day? The inability of most of the pharmacists to ask these questions may underscore their capacity to obtain adequate medication history from patients and provide precise diagnoses of minor ailments. Rutter et al. [24] also reported a similar outcome. Conversely, Miller and Goodman [45] state that poor history-taking is the major factor responsible for poor pharmacy practice in resource-limited countries. Strong positive correlation between the number of questions asked by pharmacists and positive outcomes have been reported [46, 47]. Although this correlation exists, the type of questions that can lead to positive outcomes [24, 43] in terms of correct diagnoses and recommendations are more important, as demonstrated in this study.

According to Nigeria standard treatment guideline [48], uncomplicated peptic ulcer implies peptic ulcer without upper gastrointestinal bleeding, perforation, penetration, gastric outlet obstruction, and gastric cancer. The guideline states that symptomatic treatment with antacids may be used prior to the diagnosis of gastric ulcer disease. Also, the supportive therapy by the same guideline recommends regular meals and avoidance of provocative factors (NSAIDs, alcohol and spicy foods). One-third of the pharmacists recommended the use of antacids, in accordance with the guideline, while others recommended the use of proton pump inhibitors with antacids and some others recommended regimens for the eradication of *Helicobacter pylori*. Interestingly, about 5% of the pharmacists suggested the use of an antispasmodic drug that the pseudo-patient had used and about 15% of the pharmacists recommended the use of NSAIDs for the patient. From the recommendations, it is clear that the majority of the pharmacists misdiagnosed the pseudo-patient, which is a result of poor questioning skill. Also, the array of different recommendations suggests inadequate knowledge of the standard treatment guideline and

**Table 8** Number and type of the expert panels' relevant questions asked by community pharmacists during the pseudo-patient consultation

| Questions the pharmacist should have asked | Asked n (%) | Failed to ask n (%) |
|---|---|---|
| What are the other symptoms? | 127(96.9) | 4 (3.1) |
| How long has the pain been? | 99 (75.6) | 32 (24.4) |
| What medication has been used? | 73 (55.7) | 58 (44.3) |
| In which part of the stomach do you feel the pain? | 70 (53.4) | 61 (46.6) |
| Does food relief the pain? | 44 (33.6) | 87 (66.4) |
| Is the pain like a burning sensation? | 33 (25.2) | 98 (74.8) |
| Is it menstrual cramps? | 27 (20.6) | 104 (79.4) |
| Any relief with the medication? | 20 (15.3) | 119 (84) |
| Who has stomach ache? | 16 (12.2) | 115 (87.8) |
| What medication is being used? | 11 (8.4) | 120 (91.6) |
| Any specific trigger of the stomach pain? | 8 (6.1) | 122 (93.1) |
| Does the pain occur at any particular time of the day? | 6 (4.6) | 125 (95.4) |
| How long does the pain last? | 2 (1.5) | 129 (98.5) |

highlights the unwholesome practice of dispensing antibiotics without prescription, a practice that is still prevalent in some countries [49–53]. The underpinning of these findings may not be unrelated to the fact that clinical and diagnostic skills are not frequently taught in pharmacy schools [43].

## Limitations of the study

Some of the pharmacies were visited during the rush hour; this might have affected the consultation process. Few pharmacists who gave informed consent failed to participate, citing the unacceptability of the pseudo-patient method. The evaluation of the community pharmacists' service was based on one scenario, one pseudo-patient and conducted once in a metropolitan city. The performance of the pharmacists may not be generalizable to other scenarios and pharmacists practicing in other cities or at different times of the day.

## Conclusion

The questioning skill of community pharmacists in diagnosing minor ailments was poor and few pharmacists gave an accurate diagnosis. Recommendations by the pharmacists were also mostly inappropriate. Nonetheless, the differential diagnoses were similar to the pseudo-patient's minor ailment. There is a need for communication skills to be included in the Mandatory Continuing Professional Development Training Program for pharmacists, with emphasis on questioning skills. Large-scale multi-centered studies with different pseudo-patient scenarios are required to further evaluate these findings.

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