

ORIGINAL ARTICLE

Public Knowledge and Practice of Appropriate Use of Medicines in the Gaza Strip, Palestine: A Cross-sectional Study

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ABSTRACT

Introduction: Limited knowledge about medicines use contributes to improper medicines use. This study investigates the knowledge and practice of appropriate medicine use and associated factors among Palestinians in the Gaza Strip. **Methods:** A community-based descriptive cross-sectional survey was carried out using a pre-validated questionnaire. One thousand adult participants were invited to participate using the convenience sampling method. The differences in the total knowledge and practice scores for appropriate medicine use were determined using Kruskal–Wallis and the Mann–Whitney tests. Factors significantly associated with the knowledge and practice of appropriate use of medicines were predicted using binary logistic regression. A p-value <0.05 was considered statistically significant at a 95% confidence level. **Results:** A total of 941 participants completed the questionnaire (response rate of 94.1%). The total mean knowledge score was 7.35 out of 12 (standard deviation, SD = 1.85). Also, the total mean practice score was 3.98 out of 4 (SD = 0.37). Only 0.7% of the participants knew how to dispose of medicines, while 29.0% of them checked the expiry date of medicines before using them. The study identified that male gender, good monthly income, secondary and college/university education levels, and the absence of chronic disease were more likely to be knowledgeable about using medicines properly. In addition, those aged above 55, male, and widow/divorced were more likely to practice medicines properly. **Conclusion:** The study demonstrated that the knowledge and practice of appropriate medicine use varied significantly. Low knowledge levels and malpractice in some areas might affect the safety of medicine use. Educational activities are crucial to improving knowledge and practice of proper medication use.

Keywords: Knowledge; Practice; Medicines use; Appropriate, Improper use

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INTRODUCTION

Over half of the medicines used in low-middle-income countries are inappropriately utilized (1). According to the World Health Organization (WHO), “appropriate use of medicines is defined as ‘Patients receive medications appropriate to their clinical needs, in doses that meet their requirements, for an adequate period, and at the lowest cost to them and their community’” (2). “The Third Global Patient Safety Challenge seeks the commitment of health ministers, health-system leaders, and a range of stakeholders, including medicines regulators, researchers, and patient representative bodies”, among others, to lessen medication avoidable harm by 50% over 5 years globally (3). Recent studies have identified health system shortcomings, including inadequate knowledge of prescribers, dispensers, and patients

about medicines (1). The knowledge of the patients about their medicines represents a crucial element in the success of the treatment. Lack of appropriate medicine use knowledge might lead to serious consequences, including misunderstanding of the importance of the side effects, non-adherence (4), and also significantly related to risky practice (5). Acceptable patients’ knowledge about the medications they are using would improve the safe use of medicines (6).

Many European countries focus on patients’ knowledge. In a Slovenian study, knowledge about medication considerations and adverse effects was limited to 16% and 20% of patients, respectively (7). Another Dutch study found that the rationale for medication indications was poorly understood in elderly patients taking five or more prescribed drugs (8). The knowledge of appropriate medicines use in some African countries indicates a lack of knowledge in some aspects. In Ethiopia, one study found that knowledge about medicines is inadequate in 45.2% of patients (9). Nevertheless, 11.3% of the patients knew about the side effects of the drugs they

used. To our knowledge, no studies have focused on determining patients' knowledge and practice about medication use, particularly in the Gaza Strip region of Palestine.

The Gaza Strip has a high population density for such a small area. According to United Nations Relief and Work Agency (UNRWA) reports, the Gaza Strip economic situation has been steadily declining for at least the last decade and a half. In 2020, the unemployment rate put at 49%, one of the highest in the world (10). The Palestinian territory has a fragmented and fragile health system (11). The Gaza Strip public sector experienced continuous shortages and depletion of essential medications (11). Therefore, identifying knowledge about the appropriate use of medicines among the population in a very poor area with a fragmented health system is needed. In addition, the practice of appropriate medicine use of the current study would help to improve the employed strategies and redirect attention to the variables that affect proper medicine use to promote community awareness of safe medicine use. The aim of this study is to investigate the knowledge and practice of appropriate medicine use and related factors among Palestinians in the Gaza Strip.

MATERIALS AND METHODS

Study design

The study was a quantitative cross-sectional survey conducted using a pre-validated questionnaire to evaluate the knowledge and practice of appropriate medicine use among the people in Palestine.

Study setting

The study was carried out in the Gaza Strip. The Gaza Strip is the southern governorate of Palestine. The study was conducted from April to September 2021.

Study participants

The study population consisted of adult Palestinians, aged above 18 years, of both sexes. Participants were recruited from the general public in the Gaza Strip, Palestine, through home visits. Upon approaching potential participants, they were briefed about the purpose, objectives, confidentiality, the possible benefits of the study, and the time required to complete the questionnaire. Upon their approval, each participant gave written consent and then completed a self-administered questionnaire that took 10-15 minutes. No compensation was granted to any participant.

Sampling and sample size

A fast and easy non-probability convenience sampling technique was used. Cochran's formula (1963:75) was used to calculate the sample size, with a confidence level of 95% and a 5% margin of error (12). The minimum sample size required was $n = 385$; by

applying a design effect of 2 (13), $n = 770$. Another 25% was added for possible missing data, hence the needed number of participants, $n = 962$. Based on these calculations, 1000 people were recruited to participate in this study.

Inclusion and exclusion criteria

Eligible participants were adult subjects (≥ 18 years), residents of the Gaza Strip, who had no objection to participating in the study, who were able to read, write, or listen (illiterate subjects), and who were taking medicines or took the medicines in the previous three months. People with mental impairments were excluded.

Data collection tool

The development of the questionnaire was based on a Malaysian national survey about medicines use by consumers (14), other studies (13, 15, 16), and the result of a prior qualitative study about the pattern of medicine use in the Gaza Strip, Palestine (17). In addition to sociodemographic elements, the questionnaire contained two major domains: knowledge about medicine use (12 items) and medicine use practice (10 items). The 12 closed-ended questions were used to measure specific aspects of the knowledge of the appropriate use of medicines, including identifying generic medicines, drug interactions, overuse of paracetamol and vitamins, and storage and disposal of medicines. Each of the first 11 knowledge items has three responses (Yes, No, I do not know). For scoring purposes, a score of 1 was given to the correct answer, while incorrect or did not know answers were given a score of 0. The 12th item consists of 5 MCQs: 1 correct answer and 4 incorrect answers. The correct answer was given 1, and incorrect answers were given 0 scores. For measuring the practice of medicine use, a five-point rating scale was used, including dosage instructions, discontinuation of medications, sharing medicines with others, checking the expiry date, reusing previous prescriptions, and informing doctors about medications being taken. One social pharmacy expert, two public health experts, and seven pharmacists with long experience in the pharmacy field revised and checked the developed English questionnaire. Two professional translators from the Ministry of Health translated the questionnaire into Arabic. A third professional translator handled the backward translation from Arabic into English. On completing content validity, a 40-participant sample pilot study was conducted to ensure questionnaire appropriateness and comprehensibility (face validity). The internal reliability was tested using Cronbach alpha; the value of the 11 knowledge items test (0.72) and the 10 practice items test (0.78) were accepted. A slight modification was made after the pilot study. The pilot study data were not used in the final study. The Arabic form of the questionnaire was used.

Data collection method

A paper-based, self-administered questionnaire was used to collect data in a household area in the Gaza Strip through house-to-house visits. The data were collected by a team of three research assistants with previous experience in data collection procedures. The team was oriented toward the study and data collection methods. Participants were given the needed information about the study. Each participant gave written informed consent, and then the participant filled out a self-administered questionnaire that took 10-15 minutes on average.

Data management and analysis

The data was analyzed using Statistical Package for the Social Sciences® (SPSS) for Windows version 20 (IBM Corporation, Armonk, NY, USA). The mean of total knowledge was calculated. The normality of the data was measured using the Kolmogorov–Smirnov test and found to be skewed ($p < 0.05$). Consequently, nonparametric tests were conducted using the Kruskal–Walli’s test to find the differences between more than two groups, while the Mann–Whitney test only found the differences between two groups. The total knowledge and practice means were considered a midpoint and above for “good knowledge” and “good practice”. Factors significantly related to knowledge and practice of medicines use were predicted using binary logistic regression. The p -value of < 0.05 with a confidence level of 95% was considered statistically significant.

Ethical approval

Ethical approval was obtained from both the “Human Research Ethics Committee, Universiti Sains Malaysia (JEPeM-USM)” [Reference No. USM/JEPeM/20020085], and from Palestinian Health Research Council, Helsinki Committee, (Reference No. PHRC/HC/6651/19).

RESULTS

Sociodemographic factors

During data collection, 1000 individuals were asked to fill out the questionnaires, and 941 questionnaires were completed and returned, giving a response rate of 94.1%. Table I shows the sociodemographic characteristics of the participants. The mean age of the participants was 42.39 years ($SD = 15.08$, range: 18-96). The age groups 25-34 (27.4%) and 35-44 (23.7%) represent more than half of the participants. 56.2% of the participants were male. Around two-thirds of the participants (62.1%) were refugees. One-third of the participants have a college/university degree (32.1%), while one-third have a primary or lower level of education (31.9%), and more than one-third are from the secondary level (36.9%). The survey shows that the majority of participants were married (84.0%), housewives (38.9%), or worked in the private

or NGO sector (31.8%). Most participants had a low monthly income (86.8%), and 28.3% had chronic diseases.

Knowledge of the appropriate use of medicines

The total knowledge mean score was 7.38 ($SD = 1.81$) out of a maximum of 12. Thus, this study indicated inadequate knowledge (61.5%) about appropriate medicine use among the participants. 76.1% of the participants knew that the same component of medicines is sold under different trade names. A limited number of participants did know about drug registration, while the majority of them (88.0%) did not know that Ministry of Health (MOH) registered drugs might have side effects. For drug toxicity, 53.9% of the participants did not know about the toxicity of the overuse of paracetamol on the liver. The vast majority of participants know that each medicine has an expiry date. Most participants have good knowledge about the interaction of medicines with either food (86.1%) or traditional medicines (76.1%). Meanwhile, 43.5% of the participants did not know that medication/supplement interactions might cause adverse drug reactions. More than two-thirds of participants knew that the storage in the refrigerator would not affect the expiry date of the ointments (70.9%) and syrups (72.8%). Almost all participants know that they have to follow the doctor’s or pharmacist’s directions on how to use medicines. The negative effects that might be caused by the overuse of vitamins were not known by 54.2% of the participants. Furthermore, the participants have very limited knowledge (1.71%) about the way to dispose of medicines (Table II).

Table III represents the total score of knowledge in relation to participants’ sociodemographic characteristics. The decrease in age, females, good monthly income, single marital status, college/university education level, and the absence of chronic diseases were significantly associated with the total knowledge score. Meanwhile, occupation and civil status were not associated with the knowledge score. To identify the predictors that contributed significantly to appropriate knowledge of medicine use, the significant sociodemographic factors were included in a model (Table IV). Female gender, good monthly income, and secondary and college/university education levels were more likely to be knowledgeable about using medicines properly. Females were almost two times more likely to be knowledgeable ($OR = 1.81$, 95% CI 1.37-2.41, $p < 0.001$). Participants with good monthly income were almost two times more likely to be knowledgeable ($OR = 1.73$, 95% CI 1.12-2.67, $p = 0.014$). Secondary and college/university education participants were one and a half times ($OR = 1.57$, 95% CI 1.10-2.16, $p = 0.010$) and almost two times ($OR = 1.81$, 95% CI 1.24-2.65, $p = 0.002$) to have proper knowledge about medicines use, respectively.

Practice of medicine use

The total practice score was 3.98 out of 5. As shown in Table V, the majority of the participants have not taken more than the recommended dose (4.87 ± 0.52), have not taken less than the recommended dose (4.83 ± 0.55), have not taken doses sooner than the directed (4.51 ± 0.85), have not taken more than the directed day dosage (4.83 ± 0.54), have not combined alternative and modern medicines (4.4 ± 0.91), checked the expiry date of medicines (1.45 ± 0.857 %), and have not taken medicines according to friends and relative suggestions (4.49 ± 0.95). The same participants committed malpractice by sharing medicines with others (3.88 ± 1.2), reusing doctor prescriptions when they get the same symptoms (2.44 ± 1.35), and informing their doctors or pharmacists about the medicines they take (4.08 ± 1.13).

Table VI represents the influencing factors of medicine use practice: Age, gender, marital status, chronic disease, and city of living were statistically associated with the practice of medicine use. Age group 55-64 ($p=0.001$), male ($p<0.001$), married ($p=0.026$), and participants with chronic diseases ($P=0.035$) were statistically associated with the practice of medicines use.

Significant sociodemographic factors were added to a model to identify the predicting variables that highly contributed to the proper practice of medicines use (Table IV). Age groups 55-64 and >64 years, male, widow/divorced and group with no chronic disease were more appropriately use medicines. Age group 55-64 were almost three times using medicines more properly (OR =2.77, 95% CI 1.43-5.37, $p=0.002$), while age group >64 were almost two times using medicines more properly (OR =2.16, 95% CI 1.04-4.50, $p=0.039$). Males used medicines one and a half times more properly than females (OR =1.57, 95% CI 1.20-2.06, $p=0.001$). Widow/divorced were two times less likely to have a good practice (OR =0.39, 95% CI 0.17-0.93, $p=0.034$).

DISCUSSION

The present study was conducted to provide baseline data on the knowledge and practice of appropriate use of medicines in Gaza, Palestine. The total mean knowledge score was 7.35 out of 12 (standard deviation, SD = 1.85). Also, the total mean practice score was 3.98 out of 4 (SD = 0.37). Only 0.7% of the participants knew how to dispose of medicines, while 12.0% were aware of the safety of MoH-registered medicine. 29.0% of the participants checked the expiry date of medicines before using them and 48.8% of the participants refused doctor's prescription when they got the same symptoms. The study identified that males, good monthly income, secondary and college/university education levels, and the absence of chronic

disease were more likely to be knowledgeable about using medicines properly. In addition, those aged above 55, males, and widows/divorced were more likely to practice medicines properly.

Most participants were aware that different marketed medication trade names have similar components. In an Iraqi study, 60.2% of the participants had never heard of generic medicines (18). Another Malaysian study found that knowledge regarding generic medicines was low (57.9%) (16). Meanwhile, a large part of Latvia's population (72.3%) was informed about generic medicines (19). Regarding the expiry date of medicines, almost all the participants knew about it. This is concomitant with Chinese and Saudi studies, where most respondents either paid much attention to or checked the expiry date of medicines (15, 20). The same findings were found in another Afghani study, where 97% of participants checked the drug expiration date (21). The majority of participants were aware of the possible interaction of medicines with food and traditional medicines. In India, 85.7% believed they knew about food-drug interactions (22). At the same time, a Saudi study found that 88% of participants recognized that food could interfere with taking medications (23). In Ajman, 60.4% of participants were aware of traditional medicines and medicines interactions (24); the same was true in a Jordanian study, where 58.6% of the participants thought that traditional medications could interact with drugs (25). More than half of the participants knew about possible medicines/supplement interactions. This result is better than what was found in both Albanian and Indonesian studies. In Albania, a study found that only 39.5% of participants knew that supplements could interact with medications (26). The Indonesian study found that knowledge regarding possible drug-supplement interactions needed improvement (27). At home, the most common storage place for medication was the refrigerator (28). The majority of participants have good knowledge that refrigerator storage of ointments and syrups will not affect the expiry date of modifications. While in a Saudi study, the sample responses indicated a lack of accurate information regarding storage conditions (29).

Furthermore, this study shows how knowledge was insufficient about various important aspects of the use of medicines. For instance, this study revealed that 53.9% of the participants were unaware that paracetamol led to liver toxicity if taken in excess. In a Pakistan study, 28% of participants were aware that paracetamol toxicity has a damaging effect on the liver (30). This is in contrast to a Canadian study where the majority of the participants, 76%, were familiar with the toxic effect of paracetamol on the liver (31). Less than half of participants knew that the negative effect might happen due to overusing multivitamins. Moreover, a Malaysian study showed that 46.4% of

participants were unaware that the overuse of vitamins has negative consequences (13). Knowledge of the disposal of medicines seems to be lacking among most participants. This is concomitant with a study in Nepal where 65.2% of participants were unaware of the safe disposal of medicines (32), while in a Malaysian study, the median total knowledge score of medicines disposal was 50% (33). Policies, regulations, and public awareness campaigns are highly needed to address the proper disposal of medicines among the population.

Regarding the practice of medicines use, the participants obtained 3.98 out of 5, indicating an adequate practice score. The study showed that the participants have good adherence practice; good practice regarding combining alternative and modern medicines, taking medicines according to friends' and relatives' advice, and informing doctors and pharmacists regarding their medication. At the same time, inappropriate practices were seen among the participants in sharing medicines with others, checking the expiry date, and reusing doctor's prescriptions. Sharing medicines with others was a common practice (34), because the majority of the public was not well informed about the risks related to borrowing and lending medicines (35). The practice of checking the expiry date is very bad in our study, which is in contrast to what we found in many studies where the majority of participants verified checking medication expiry date (5, 36, 37).

Some sociodemographic factors predicted knowledge and practice of the appropriate use of medicines. In this study, people aged more than 55 years had a higher score of practice than other age groups, which is in contrast to what was found in a Malaysian study (13), while some studies indicated different and contradictory medication knowledge for elderly people (38).

Females showed a greater tendency to be knowledgeable and use medicines more appropriately compared to males. This is concomitant with a Malaysian study where females knew more than males about medicines (13). The same finding was found in a study where female patients with gastrointestinal bleeding knew more about rational drug use of medicines (39).

Participants with a good income were more likely to be knowledgeable than others. In a Vietnam study, household income had a positive association with awareness of prescription medicine and antibiotics (40). Another Turkish study confirmed the results where good-income patients found to have more knowledge than other income groups (39). Secondary and college/university-educated participants have better knowledge compared to other primary schools

or those with lower levels of education. This was found in many other studies, where educated patients usually possess appropriate knowledge about their medications (4). The knowledge level rising gradually as the educational level increases means that awareness and educational interventions need to target the less educated part of the population (41).

Participants without chronic diseases were more knowledgeable than others with chronic diseases. Opposed results were found regarding the knowledge about the generic medicines in India where people with chronic medicines had better knowledge than participants without chronic illnesses (16).

Strength and limitations

The strength of this study is its large sample size where more reliable and greater the precision of the results and high participant response rate. Moreover, some of the study's limitations should be acknowledged. First, convenient sampling technique were used for selecting participants from the Gaza Strip, so the findings may not apply and cannot be generalized to the Palestinian population. Second, the study did not assess health literacy, which helps determine the knowledge level about health-related issues. Finally, a self-administered questionnaire, as a data collection tool, can lead to biased results, especially when reporting monthly household income.

CONCLUSION

Our study demonstrated inadequate knowledge of appropriate medicines use among the Gazan population in Palestine. In addition, we found substantial differences in some aspects of knowledge of the appropriate use of medicines among the participants. There is poor knowledge about the disposal of medicines and the toxicity of using or overusing some medications that might put patients' health at risk. Sex, monthly income, education, and the absence of chronic disease were the factors affecting participants' knowledge. Despite the adequate practice score, inappropriate practice was seen among the participants in sharing medicines with others, checking the expiry date, and reusing doctor's prescriptions. Age, sex, and marital status were the main factors affecting medicines use practice. These results will help health policymakers implement targeted educational programs to improve the appropriate use of medicines. Further studies should be warranted to assess the driving factors for some aspects of inadequate knowledge and inappropriate medicine use.

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