

# Exit-Knowledge About Dispensed Medications and Associated Factors Among Patients Attending the Outpatient Pharmacy of Ambo General Hospital, Western Ethiopia

This article was published in the following Dove Press journal:  
*Patient Preference and Adherence*

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**Background:** Insufficient knowledge of patients about their dispensed medications may result in inappropriate use of medication which can lead to treatment failure and poor therapeutic outcome.

**Purpose:** This study aimed to determine the exit-knowledge level and its determinants among patients attending outpatient pharmacy of the Ambo General Hospital.

**Patients and Methods:** Hospital-based cross-sectional study was conducted on 400 study participants who visited the outpatient pharmacy in Ambo General Hospital from October to December 2019. Face-to-face interview was conducted using structured questionnaires to assess the exit-knowledge of the patients about their dispensed medication at the pharmacy exit. A binary logistic regression was employed to determine factors associated with the exit-knowledge. The association was statistically significant at 95% of confidence interval with a p-value less than 0.05.

**Results:** A total of 400 patients participated in the study with a 100% response rate. Of the total, 222 (55.5%) patients had sufficient exit-knowledge about their dispensed medication. Patients in the age group of 19–29 (AOR=3.1; 95% CI (1.7–5.6) and 49–59 (AOR = 3.7; 95% CI (2.3–6.0)) had greater exit-knowledge than the elderly participants (>60 years). Participants who reported the comfort of the waiting area was not suitable had lower odds of sufficient exit-knowledge (AOR= 0.7; 95% CI (0.2–3.0)) in comparison to those who reported a suitable waiting area. Lower odds of sufficient exit-knowledge (AOR=0.4; 95% CI (0.3–0.7)) was determined among those who responded fairly clarity of the dispensers guidance in comparison with those reported clear guidance. The gender and the residence of the participants were also had a significant association with the exit-knowledge level.

**Conclusion:** Modest number of the patients had sufficient exit-knowledge of their dispensed medication. Age, gender, residence, perceived comfort of the waiting area and perceived clarity of the pharmacists' guidances were significantly associated with the exit-knowledge.

**Keywords:** exit-knowledge, outpatient pharmacy, patients

## Introduction

Appropriate use of medicines is essential for treatment to be effective in ensuring better health care for patients and the community as a whole.<sup>1</sup> The World Health Organization (WHO) defines the rational use of medicines as ensuring that a patient receives medications appropriate to their clinical needs, in the right doses, for an

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adequate duration of therapy, and at the right cost to the patient and their community.<sup>2-4</sup> To overcome the challenges in delivering appropriate medication, a good dispensing practice that includes strong pharmacists-patient interaction is required.<sup>5-8</sup>

A strong pharmacist-patient relationship is essential to ensure the safe use of drug and prevent the occurrence of drug therapy problems.<sup>9-12</sup> The pharmacist should provide sufficient to patients about the name of the medication and counsel them about, the frequency and duration of therapy, the route of administration, and the potential toxicities the medication dispensed.<sup>7</sup> Several factors affect the dispensing practice of pharmacists, such as the language barrier, the pharmacists' commitments, knowledge and experience and the dispensing room environment.<sup>13-16</sup>

Patients' knowledge about the prescribed medications is the essential pre-requisites for the optimal use of medicines.<sup>17</sup> Insufficient knowledge about the dispensed medications may result in inappropriate use of medication in the patients, which can lead to treatment failure and poor therapeutic outcome.<sup>18</sup> Most of the studies on patients' knowledge of the dispensed medications are from developed countries<sup>19</sup> and some are from developing countries.<sup>13,14,20</sup> Despite, some studies were conducted in the Ethiopia, there is discrepancies of the results. Therefore, this study aimed to identify factors affecting patients' exit-knowledge about their dispensed medications at the outpatient pharmacy of Ambo General Hospital (AGH).

## Patients and Methods

### The Study Design, Setting and Participants

A hospital-based cross-sectional study was conducted from October to December 2019 in AGH which is located 126 km west of Addis Ababa, the capital city of Ethiopia. The hospital is one of the governmental hospitals in western Ethiopia. The hospital has more than 183 healthcare professionals and 240 administrative and supportive staff. It provides services for approximately greater than 20,000 populations annually with a total of 150 beds.

All patients aged  $\geq 15$  years and received at least one drug from the outpatient pharmacy were included in the study. Patients refused to provide oral consent, unconscious and severely ill patients who received greater than three medications were excluded from the study. The latter two were excluded, since information recall and retention abilities of such individuals were thought to be affected by

the disease condition and the number of medications dispensed to them, respectively.

### Sample Size Determination and Sampling Technique

The sample size was calculated using the single population proportion formula ( $N = Z (\alpha/2)^2 (pq)/d^2$ ). Where  $n$ =required sample size;  $p=0.386$  from the study conducted in Hiwotfana specialized University Hospital;  $Z$ =standard value of  $Z$  distribution at 95% confidence interval (CI) and  $d=0.05$  margin of error. Accordingly, 364 sample size was calculated. Finally, a sample size of 400 participants was estimated adding 10% ( $n=36$ ) of contingency for non-response. Participants eligible for the study were consecutively added until the required sample size was achieved.

### Data Collection Tools and Method

A data collection tool for the patient interview was developed from previously conducted studies.<sup>6,16,21-23</sup> Questionnaires were translated to local language Afan Oromo and Amharic in collaboration with Afan Oromo and Amharic Departments of Ambo University, respectively. The newly translated and refined items were administered to small samples (10 participants) as with a typical set of participants. Two trained clinical pharmacists working in Ambo General Hospital were involved in data collection. The pre-test was done on 10%<sup>20</sup> of the study population to guarantee the quality of data collection, in which they were excluded from the study.

The tool consisted of parameters to measure socio-demographic characteristics of the patients, perception of patients for the pharmacists' service and the exit-knowledge. Patients' exit-knowledge indicates patients recall ability about the pharmacists counselling and guidance on their dispensed medication at the exit of outpatient pharmacy.

Patients' exit-knowledge was referred to as a key outcome variable. To determine the exit-knowledge level, 13 questionnaires were developed. The patient was assumed to be with sufficient knowledge about the dispensed medication when he/she addressed two-thirds ( $\geq 8$  out of 13) of the knowledge questionnaires. The data were collected by two trained clinical pharmacists working out of the study setting and supervised daily by the principal investigator.

### Data Analysis and Interpretation

All extracted data were cleaned, coded and entered to the Statistical Package for the Social Science (SPSS) software

version 20 for analysis. Categorical data were expressed in numbers and percentages. Potential variables with p-value <0.2 by univariate analysis were retained for subsequent consideration for binary logistic regression analysis. Finally, variables with p-value <0.05 were considered to have a significant association with the outcome variable.

## Results

### Patients Socio-Demographic Characteristics

Of the 400 participants, more than half were males, 220 (54%) and urban residents, 213 (53.3%). As shown in Table 1, most of the participants were in the age category of 45–59, 122 (30.2%). In the case of their educational background, the majority 166 (41.5%) completed tertiary school. Half of the participants, 212 (53%) visited the outpatient pharmacy only once.

### Perception of the Patients on Pharmacists Service

Almost 4 out of 5 patients (83.8%) had good interaction with the pharmacist in the dispensing room. A high proportion of the participants, 375 (93.8%) reported that the ascent and the tone of the pharmacy personnel were clear and loud enough to be heard as indicated in Table 2. Regarding the clarity of the dispensers' guidance and sufficiency of drug information service, 332 (83%) and 176 (44%) of the participants reported that they received clear guidance and enough drug information about their dispensed medication, respectively. Only 205 (51.2%) patients were comfortable with the dispensing room waiting area.

### Exit-Knowledge of the Patients

In this study, most of the participants recalled the name of the medication (304, 76%), drug indication (241, 60.3%), route of administration (396, 99%), the medication frequency (283, 70.8%), appropriate handling of the medication (374, 93.5%), how to use the medication (331, 82.8%), action taken for the forgotten dosage (325, 81.3%) and expected therapeutic outcome (216, 54%) as shown in Table 3. In contrast, the exit-knowledge of the participants was poor regarding the duration of therapy (178, 44.5%), the drug interaction (46, 11.5%), and potential toxicities (32, 8%) of the dispensed medication. In general, 222 (55.5%) of the patients had sufficient exit-

**Table 1** Socio-Demographics Characteristics of the Patients Attending Outpatient Pharmacy of the AGH from October to December, 2019

| Patient Characteristics     | Frequency<br>N (%) |
|-----------------------------|--------------------|
| Sex                         |                    |
| Female                      | 180 (45)           |
| Male                        | 220 (54)           |
| Age category                |                    |
| <18                         | 79 (19.8)          |
| 19–39                       | 115 (28.7)         |
| 40–59                       | 122 (30.2)         |
| >60                         | 84(21)             |
| Marital status              |                    |
| Single                      | 131(32.8)          |
| Married                     | 163(40.8)          |
| Divorced/widowed            | 106 (26.5)         |
| Occupational status         |                    |
| Self-employed               | 55(16.9)           |
| Government employed         | 70(21.5)           |
| Educational status          |                    |
| Illiterate                  | 137 (34.3)         |
| Primary school              | 49 (12.3)          |
| Secondary school            | 48(12)             |
| Tertiary school             | 166 (41.5)         |
| Residence                   |                    |
| Urban                       | 213 (53.3)         |
| Rural                       | 187 (46.8)         |
| Frequency of pharmacy visit |                    |
| 1st time                    | 212 (53)           |
| 2nd time                    | 132 (33)           |
| >2                          | 56 (14)            |
| 1st language of the patient |                    |
| Afan Oromo                  | 249 (62.3)         |
| Amharic                     | 149 (37.3)         |
| Tigrigna                    | 2 (0.5)            |

knowledge about their dispensed medication at outpatient pharmacy exit.

### Factors Affecting Exit-Knowledge of the Patients

As shown in Table 4, the binary logistic regression analysis shown that several variables were found to have a significant association with the patients' exit-knowledge. Among the socio-demographic characteristics of the participants', age, sex, the residence of the participants significantly affects their recall potential about their

**Table 2** Perception of the Patients on Outpatient Pharmacy Service at AGH from October to December 2019

| Perception Variables                            | Frequency<br>N (%) |
|---|--------------------|
| Interaction with the pharmacist                 |                    |
| Poor  | 8 (2)              |
| Fair  | 57 (14.2)          |
| Good  | 335 (83.8)         |
| Ascent and tone of the pharmacy personnel       |                    |
| Clear   | 375 (93.8)         |
| Not clear                                       | 25 (6.3)           |
| Comfort of the waiting area of dispensing room  |                    |
| Not suitable                                    | 67 (16.3)          |
| Fairly suitable                                 | 128 (32)           |
| Suitable  | 205 (51.8)         |
| Politeness of the pharmacy personnel            |                    |
| Impolite  | 28 (7)             |
| Fairly polite                                   | 66 (16.5)          |
| Polite  | 306 (76.5)         |
| Clarity of the dispensers' guidance             |                    |
| Not clear                                       | 11 (2.8)           |
| Fairly Clear                                    | 57 (14.2)          |
| Clear   | 332 (83)           |
| Sufficiency of the dispensers' drug information |                    |
| Not enough                                      | 68 (17)            |
| Enough  | 176 (44)           |
| Do not know                                     | 156 (39)           |

dispensed medication. Patients in the age group of 19–29 (AOR=3.1; 95% CI (1.7–5.6) and 49–59 (AOR = 3.7; 95% CI (2.3–6.0) were 3.1 and 3.7 times greater exit-knowledge than the elderly patients (>60 years). Participants who were residing in the urban area were 3.7 times more likely to have sufficient knowledge of dispensed medication than those from the rural. Female patients were also less odds (AOR= 0.7; 95% CI (0.5–0.9)) of sufficient exit-knowledge than males.

The comfort of the waiting area of the pharmacy dispensing room affected the exit-knowledge of the participants. Participants who reported the comfort of the waiting area was not suitable had lower odds of sufficient exit-knowledge (AOR= 0.7; 95% CI (0.2–3.0)) in comparison to those who reported as a suitable waiting area. A significantly reduced odds of sufficient exit-knowledge

**Table 3** Exit-Knowledge of the Patients at Outpatient Pharmacy of AGH About Their Dispensed Medication from October to December 2019

| Patient's Knowledge Status (Recalling Capability) | Frequency<br>(%) |
|---|------------------|
| <b>Name of the medication</b>                     |                  |
| Yes   | 304 (76)         |
| No  | 96 (24)          |
| <b>Medication indication</b>                      |                  |
| Yes   | 241 (60.3)       |
| No  | 159 (39.8)       |
| <b>Route of administration</b>                    |                  |
| Yes   | 396 (99)         |
| No  | 4 (1)            |
| <b>Duration of therapy</b>                        |                  |
| Yes   | 178 (44.5)       |
| No  | 222 (55.5)       |
| <b>Medication's frequency</b>                     |                  |
| Yes   | 283 (70.8)       |
| No  | 117 (29.3)       |
| <b>Action taken for forgotten dosage</b>          |                  |
| Yes   | 325 (81.3)       |
| No  | 75 (18.8)        |
| <b>Appropriate handling of the received drug</b>  |                  |
| Yes   | 374 (93.5)       |
| No  | 26 (6.5)         |
| <b>Drug interaction</b>                           |                  |
| Yes   | 46 (11.5)        |
| No  | 354 (88.5)       |
| <b>Common potential toxicities</b>                |                  |
| Yes   | 32 (8)           |
| No  | 368 (92)         |
| <b>Direction how to use medication</b>            |                  |
| Yes   | 331 (82.8)       |
| No  | 69 (17.3)        |
| <b>Medication label</b>                           |                  |
| Yes   | 292 (73)         |
| No  | 108 (27)         |
| <b>Expected therapeutic outcome</b>               |                  |
| Yes   | 216 (54)         |
| No  | 184 (46)         |
| <b>Average sufficiency of the awareness</b>       |                  |
| Yes   | 222 (55.5)       |
| No  | 178 (44.5)       |

(AOR=0.4; 95% CI (0.3–0.7)) was determined among those who responded fairly clarity of the dispensers guidance in comparison with those reported clear guidance.

## Discussion

Our cross-sectional study explores factors affecting patients' exit-knowledge about their dispensed medication in the outpatient pharmacy of AGH. The exit-knowledge of the patients was affected by different factors includes socio-demographic characteristics and perception of the patients and healthcare-related factors.

Providing drug information to the patients about their medical conditions and drug therapy is one of the determinant components of the rational use of the drug. For this reason, patients should be informed and educated about their drug therapy. Communication barrier and inadequate interaction between patients and pharmacists on dispensed medications can lead to poor adherence and treatment failure.<sup>18,24</sup> In this study, most of the patients perceived that their interaction with the pharmacists (83.3%), the ascent and tone (93.8%), the politeness (76.5%) and guidance (83%) of the pharmacist were sufficient enough to recall how to administer and use their medication. The result was comparable with the other studies done in Ethiopia.<sup>6,14,16</sup>

The finding of this study indicated that most of the patients (92%) did not know the potential side effects of their prescribed medication. Knowledge about the possible side effects of medicine is important for patients to recognize side effects early, and promptly report these to physicians. A study indicated that patients received appropriate medicines-related information, including side effects had adequate adherence to their drug therapy.<sup>25,26</sup> The study from Canada<sup>25</sup> indicated that experiencing side effects often results in discontinuation of therapy. A similar study in Ethiopia, from Mekelle (31.2%)<sup>16</sup> and Harar (33.6%)<sup>14</sup> indicated that less proportion of the patients know the potential side effects of their drug therapy. This might be related to the poor educational status of the patients, the high workload of the pharmacist and discomfort of dispensing room waiting area.<sup>27</sup> Besides, the less frequent (<1) visit to the pharmacy (53%) by our study participant might be the other plausible reason. A study conducted in Saudi Arabia<sup>28</sup> indicated that patients with a previous history of pharmacy visit had excellent knowledge about their dispensed medication.

The current study indicated that only 55.5% of the participants had a sufficient exit-knowledge about their

dispensed medication. This finding is less than the study conducted in the Ayder Comprehensive Specialized Hospital, Mekelle (81%). But, it is greater than studies done in Gondar (38.3%),<sup>29</sup> eastern Ethiopia (38.6%)<sup>30</sup> and Hiwotfana specialized University Hospital, Harar (46%).<sup>16</sup> The discrepancy of the findings among the studies might be due to differences in the calculation of knowledge score, language barrier, counselling history, frequency of pharmacy visit and educational status of the patients. Our finding indicated that those participants not comfortable with the waiting area of the dispensing room had a high risk of insufficient exit-knowledge about their dispensed medication. Similarly, studies reported that the language barrier between pharmacist and participants were a cause of poor exit-knowledge.<sup>14,16</sup>

The binary logistic regression analysis indicated that age, sex, residence, the comfort of the waiting area and clarity of the dispensers' guidance affected the exit-knowledge of the dispensed medication. Urban patients had 3.7 times more likely to have sufficient knowledge of dispensed medication than those from the rural. Similarly, a study from southwest of Ethiopia indicated greater exit-knowledge among urban patients than rural patients.<sup>31</sup>

The comfort of the waiting area was one of the factors affecting the exit-knowledge of the participants. Participants not suitable and fairly suitable to the dispensing room waiting area had less likely to have sufficient exit-knowledge than those comfortable in the room. WHO recommendation indicated that a good working environment promotes safe working and reduces stress levels for other staff and patients.<sup>32</sup>

Clarity of dispensers guidance also determines the recall ability of the participants about their prescribed medications. Patients who were not clear and fairly clear with the pharmacist guidance had lower exit-knowledge level than the comparators. The current study revealed that patients who responded fairly clarity of the pharmacist's instruction how to take the medications had 60% less likely to have sufficient exit-knowledge than who got clear instruction. A study by Desta et al indicated that patients having clear instruction from pharmacist had 3.6 times greater exit-knowledge than those responded not clear. The finding of this study showed that patients in the age category of 19–39 and 40–59 years had 3.1 and 3.7 times more likely to have sufficient exit-knowledge than elderly patients, respectively. This could be explained by



**Table 4** Factors Affecting the Exit-Knowledge of the Patients at the Outpatient Pharmacy of AGH from October to December 2019

| Variables                           | Sufficient knowledge |             | COR (95% CI)  | AOR (95% CI)  | P-value |
|-------------------------------------|----------------------|-------------|---------------|---------------|---------|
|                                     | Yes<br>N (%)         | No<br>N (%) |               |               |         |
| Age in years                        |                      |             |               |               |         |
| <18                                 | 29 (13.1)            | 50 (28.1)   | 0.6 (0.4–0.9) | 0.9(0.5–1.8)  | 0.83    |
| 19–39                               | 80 (36)              | 35 (19.7)   | 2.3 (1.5–3.4) | 3.1(1.7–5.6)  | 0.00    |
| 49–59                               | 76 (34.2)            | 46 (25.8)   | 1.7 (1.1–2.4) | 3.7 (2.3–6.0) | 0.00    |
| >60                                 | 37 (16.7)            | 47 (26.4)   | 1             | 1             |         |
| Sex                                 |                      |             |               |               |         |
| Female                              | 123 (55.4)           | 57 (32)     | 2.2 (1.6–2.9) | 0.7 (0.5–0.9) | 0.02    |
| Male                                | 99 (44.6)            | 121 (68)    | 1             |               |         |
| Residence                           |                      |             |               |               |         |
| Urban                               | 143 (64.4)           | 70 (39.3)   | 2.0 (1.5–2.7) | 3.7 (2.3–6.0) | 0.00    |
| Rural                               | 79 (35.6)            | 108 (60.7)  | 1             | 1             |         |
| Comfort of the waiting area         |                      |             |               |               |         |
| Not suitable                        | 25 (11.3)            | 40 (22.5)   | 0.6 (0.4–1)   | 0.7(0.2–0.9)  | 0.00    |
| Fairly suitable                     | 49 (22.1)            | 79 (44.4)   | 0.6 (0.4–0.9) | 0.3(0.1–0.6)  | 0.00    |
| Suitable                            | 148 (66.7)           | 59 (33.1)   | 1             | 1             |         |
| Clarity of the dispensers' guidance |                      |             |               |               |         |
| Not clear                           | 4 (1.8)              | 7 (3.9)     | 0.6 (0.2–1.9) | 0.4(0.2–0.7)  | 0.66    |
| Fairly clear                        | 12 (5.4)             | 45 (25.3)   | 0.3 (0.1–0.5) | 0.4(0.3–0.7)  | 0.00    |
| Clear                               | 206 (92.8)           | 126 (70.8)  | 1             | 1             |         |

the fact that ageing is associated with a decline in the efficiency of cognitive processes.<sup>33</sup>

We acknowledge several limitations of the study. First, the study was a single centred study and the finding cannot be generalized to an entire country or abroad. Second, the use of self-reporting and face-to-face interview can potentially lead to recall bias by the respondents, which should be taken into consideration while interpreting the result. Besides, the exit-knowledge of the patients might be affected by the recall ability of the patients since the questions were subjective. Lastly, not to the least, exclusion of patients with poly-pharmacy may undermine the impact of poly-pharmacy on patients' knowledge.

## Conclusion

The current study indicated that the participants had modest exit-knowledge level about their dispensed medications. The exit-knowledge of the patients was significantly affected by the age, the gender, the residence, the perceived clarity of the dispensers' guidance, and the perceived comfort of the waiting area. We recommend the pharmacists and the hospital managers to provide clear and enough instruction to the patients how to take their

medications and to create conducive and sufficient dispensing room.

## Abbreviations

WHO, World Health Organization; AOR, adjusted odds ratio; COR, crude odds ratios; CI, confidence interval; AGH, Ambo General Hospital.

## Data Sharing Statement

All data used to support the result of this research are available and researchers who need further clarification can obtain the data on reasonable request.

## Ethical Approval and Consent to Participate

The study was conducted by following per under the declaration of Helsinki. Ethical approval was obtained from the Ethical Review Committee of the College of Medicine and Health Science, Ambo University with the reference number of SP\0746\19. Permission to conduct the study was also obtained from the AGH Medical Directorate. Verbal informed consent was approved by ethical review committees. Accordingly, oral informed

consent was obtained from the adult patients and legal guardian oral consent was also obtained for patients under the age of 18 years before the data collection. The confidentiality of the study participants was maintained by assigning unique identifiers during data collection and analysis.

## Consent to Publish

Not applicable.

## Acknowledgment

We acknowledge the AGH staffs and managers for providing access to the data. We were also grateful for the data collectors and supervisors for carefully undertaking their tasks.

## Author Contributions

All authors contributed to data analysis, drafting or revising the article, have agreed on the journal to which the article will be submitted, gave final approval of the version to be published, and agree to be accountable for all aspects of the work.

## Funding

No funding was obtained.

## Disclosure

All authors declare they have no conflicts of interest for this work.

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