

Medicine Storage at household level and Associated Factors in Wolaita Sodo Town Southern Ethiopia

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Abstract

Introduction Medicines are sold in health facility and peoples buy and store at home and used for treatment and prevention of disease. Medicine kept at home allows people to use irrationally and remains a key health problem in many developing countries.

Objectives The purpose of this study is to assess Medicine storage at home and associated factors in Wolaita Sodo town, Southern Ethiopia From February 1 March 31,2017 Southern Ethiopia.

Methods and Materials A community based cross sectional study design was used. The source population of this study was all households residing in Wolaita Sodo town. Eight hundred thirty four study participants were selected for the study by random sampling. Pre-tested structured questionnaires were used to collect the required data. The data was analyzed by using Statistical Package for Social science [SPSS] version 20. Binary logistic regression analysis was used to assess the effect of independent variables on the dependent variables. Odd ratios with 95% C.I. was used to measure association between independent variables and outcome and variables with p-value <0.05 was considered statically significant.

Result Data were collected from a total of 824 households. About 212(25.7%) households were kept medicine at home. The most of medicines stored at household are left over medicines from prescribed drugs and self purchased. Most of drugs are stored in health professionals and their family members' households.. The finding indicates that those households with health professional family member [COR=5.347, 95%CI ((3.704-7.706)], self medication practice [COR = 2.986, 95%C.I.(2.021-4.410)], Knowledge on medicines if not taken without health professional consultation danger COR = 0.524, 95%C.I (0.360-0.763), knowledge about rational drug use COR = 0.501, 95%C.I (0.340-0.738). were associated with medicine storage at home. Therefore, there is a need for an intervention to address this practice

Key words: Medicine stored, Left over medicine, self medication, Health professional, Sodo Ethiopia.

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I. Introduction

Medicine availability at household level is a common practice in many developed and developing countries. Studies in different countries also indicate that the easy access of medicines kept at home enabled people to a high consumption rate of medicine by self medication and use medicine irrationally. This is influenced by interplay of the knowledge, storage, expectations of prescribers and patients, economic incentives, characteristics of a country's health system, and the regulatory environment(1).

All over the world medicines are kept at home and used for different reason including for prevention and treatments of acute and chronic illnesses or anticipated future emergency use. Availability of drug at home is a common practice and may cause a potential risk to damage health. The easy access of medicine available at home allows people to use irrationally. World Health organization defines rational use of drugs. The patients receive medicines appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and the community. Severe consequences incurred by irrational use of drugs include adverse drug reactions, drug resistance, protracted illness and even death (2, 3).

The WHO estimated that half of all medicines in the world are used irrationally. Severe consequences incurred by irrational use of drugs include adverse drug reactions, drug resistance Anti-Microbial Resistance, protracted illness and even death(4). The AMR is a natural consequence of exposure to antimicrobials and is not a new phenomenon. Even with appropriate antimicrobial use, there is a probability of developing microbial resistance. The progress, however, is likely to be more rapid when there is inappropriate use. Much evidence also supports the view that the total consumption of antimicrobials is the critical factor in selecting resistance. The easy availability of antibiotics over the counter, inadequate dose and time are mainly held responsible for development of resistance (5-7)

The problem regarding medicines availability at homes include poor storage conditions due to humidity and temperature are not regulated and lead to increases the risk of deterioration and expiry of medicines and

offer opportunities to irrational consumption and waste, including self-medication, unintentional toxic exposure of small children and intentional intoxication lead to ineffectiveness and reduction or elimination of its potency. Irrational use of drugs leads a patient not to take medicine as directed by physician and reduced access and attendance rates due to medicine stock outs, loss of patient confidence in health professional. The other factors which influence appropriate drug use are prescribing practices. "Worldwide, more than half of all medicines are prescribed, dispensed, or sold improperly, and 50% of patients fail to take them correctly. Moreover, about one third of the world's population lacks access to essential medicines" (2, 8, 9)

Essential medicines are those that satisfy the priority healthcare needs of the population and intended to be available within the context of functioning health systems at all times, in adequate amounts, in appropriate dosage forms, with assured quality and adequate information, and at a price the individual and the community can afford (8-10).

In most developing countries including Ethiopia, many drugs are dispensed and purchased over the counter and used for health related problems, nearly 60- 80%, are treated through availing at home and without health professional consultation (11-14). Recently, this practice is widely accepted and successfully integrated into many health care systems throughout the world. Few studies were conducted at household level in Ethiopia to assess medicine availability. Such studies will provide important insight to prevent the reutilization and might help the policy makers and regulatory authorities to focus on the storing of medicine at home.

So that this study was assessed Medicine availability at home and associated factors in Wolaita Sodo town southern Nation nationalities and peoples region, Ethiopia.

II. Statement of the problem

The availability of medicines in households is a risk factor for irrational drug use mainly due mainly to the easy access. In most communities of developing countries, there is limited awareness among the population on how to store and the safety of drugs commonly found in homes(15). Worldwide, more than half of all medicines are prescribed, dispensed, purchased or sold improperly, and half of patients fail to take them correctly (3).The easy access to home-stocked medicine has enabled a high consumption rate of medicine for self-limiting diseases (11, 12).

The medicines available at homes were mostly left over and for ongoing treatments which could indicate that poor medication adherence to drug treatment and high prevalence of ill health in the community. Challenges in healthcare delivery such as inadequate access, lack of medical personnel and frequent drug stock outs common in developing countries and may influence communities to avail drugs in homes. Prescription drugs are intended mainly for current use and sometimes left unused, which may get expired or may be repeated in the form of self medication. Re-use of leftover drugs for self initiated treatment is unsafe, especially antibiotics and other prescription drugs which should be used under supervision of medical professional and limited dose(4).

The availability of medicine, inappropriate use and the emerging problem of Anti Microbial Resistance require worldwide attention and urgent and intense actions promoting appropriate use of drugs at household level. Appropriate use of drugs is also one essential element in achieving quality of health and medical care for patients and the community. Medication safety is the design of medication administration strategy to ensure the five rights; right patient, right medication, right dose, right route and right time(5).

Whether it is prescription or over -the Counter , no medicine is without risk. Up to half of people who use medicines, do not used them as prescribed. Home medicine chests, which are often kept in inappropriate locations and containers, promote opportunities for irrational consumption, exchanging of medicines, irresponsible self-medication, unintentional toxic exposure and intentional intoxication (6, 7). The medicines available in homes were mostly for ongoing treatments. Storage of large quantity of medications at home increases the risk of a wide range of potential drug-related problems, like errors in taking medications, accidental poisoning, adverse drug reactions, and can be considered as a waste of resources. Health professionals often focus on giving patients information on medicine use with limited information offered on storage and their disposal(2).

In sub-Saharan Africa, it is common to find prescription drugs being sold and purchased by people in the markets and open areas by unqualified people. The misuse of medicines continues to be widespread and this has serious health and economic implications, especially in resource-poor settings for the rational use of drugs and increasing microbial resistance to drugs (16).

Generally the main reason to undertake this study was due to the fact that the increasing health issues associated with medicine available at home, inappropriate storage and use of medicine which is increasingly becoming a challenge in Ethiopia. Therefore, knowing the prevalence and nature of these hoarding in household level is important to advise appropriate educational, regulatory and administrative measures.

In order to promote rational use of drugs, it is important to understand medicine storage and associated factors. Hence, this population-based survey study was conducted to assess the medicine storage at household level and its associated factors in Sodo Town, Wolaita Zone, Southern Ethiopia.

III. Methods and Materials

The study was conducted in Sodo Town, which is one of the 12 Woredas and 3 administrative Towns (equivalent of districts) of Wolaita Zone in the Southern Nations, Nationalities and People Region (SNNPR) of Ethiopia. Sodo is located 380 km southeast of Addis Ababa through Shashamane and 157 km south of Hawasa (SNNPR capital city). Sodo is surrounded by Sodo Zuria Woreda in all directions. Based on the report obtained from the town administration in 2016, it is structured into 18 kebeles (an equivalent of counties), and is the smallest administrative unit in Ethiopia. The total population of the town was 140,105 in 2016, of which 71,453 were female and 68,652 were male. There are 49,669 households, 3 health centers, 7 health posts, 22 private primary clinics, 15 medium clinics, 3 medium tooth clinics, 8 pharmacies, 18 drug stores, 5 ruler drug vendors, 1 private general hospital and 1 university teaching referral hospital in Sodo (21).

Data Collection Method

A face-to-face interview with household heads based on structured pre-tested questionnaires was done in selected households that were found during data collection. The questionnaire was both close-ended and open-ended questions that can accommodate all required data. The questionnaires were translated to Amharic, and Wolaitigna, then back to English language by language expert to ensure consistency. Six health professionals, who had previous experience on data collection, were selected and assigned as interviewers. Two senior pharmacists were assigned as supervisors. The principal investigator gave two days of training to the data collectors and the supervisor about the questionnaire and data collection technique.

Then the questionnaires were developed by reviewing different literatures and they contain introduction, socio-demographic, family health condition and place where receiving care, knowledge, awareness and attitude towards medicine, drug regulation activity and observation on medicine available at home and pre-tested on 5% of the actual sample size out of the study area (in non-selected kebele called Gola) actual before data collection. After informed consent was obtained from the participants, background information and possible factors were collected in a form of questionnaire. Data on socio-demographic and socioeconomic details (age, gender, educational status, ethnicity, religion and income), medicine availability and reasons for kept medicine at home, attitude towards hoarding of medicine were collected.

Data processing and Analysis

Each questionnaire was collected and checked for its completeness before entry. Then data was entered into a computer and cleaned with Epi-Info version 3.5.4 to minimize errors and data from EPI exported to SPSS version 20. The analysis was done by using Statistical Package for Social Science [SPSS] version 20. Attitude towards medicine availability at home were scored with seven questions and analyzed by Likert's scale. Cronbach's alpha was used to analyze internal consistency. Quantitative statistics like frequency percentage, cross tabulation was carried out and then odds ratio with 95% CI were used to measure association and statistical significance of socio-demographic and other independent variables related to medicine storage at home. Logistic regression analysis was used to assess the relative effects of independent variables on the dependent variable. Those variables with p -value < 0.05 were transferred to multivariate analysis.

Ethical Consideration

The study protocol was approved by the ERC (Ethical Review Committee) of College of Health Sciences and Medicine, Wolaita Sodo University. Based on the approval, an official letter was written by the School of Public Health to Zonal Health Department. Explanation on the objective of the research was provided to the concerned personnel at Zonal level. Support letters that were submitted to the Sodo Town Health Office were obtained from the Zonal Health Department. Similarly, the town was written letter to the health facilities and kebeles for cooperation. At last data were collected after assuring the confidentiality nature of responses and obtaining oral consent from the study participant. All the study participants were encouraged to participate in the study and at the same time they were told also that they have the right not to participate. The data collectors were had discussion on the issue of confidentiality and asked for written and signed consent before the start of data collection and participants were informed that they have full right to refuse or discontinue participating in the research and skip the question that they do not want to give response.

IV. Results

Socio-demographic characteristics of the respondents

This population-based survey examined Eight hundred and twenty four households which were sampled from nine kebeles. Thus, all sampled households in the selected kebeles were included in the study and there was no resistance from interviewers. From the total of 834 study participants, 824 were interviewed with response rate of 98.8%. Out of 824 respondents, 436 (52.9%) were males while the remaining 388 (47.1%) were females. From the total study participants, 366 (44.4%) were between the age of 35-54 years old followed by 360(43.7%) between the age of 18-34 years old. The mean age distribution of the respondent was 37.39 years (SD = 12.816). The minimum age was 18 and the maximum was 65. Concerning religion, from the total 824 respondents 409(49.6%) was protestant religion followers and followed by Orthodox religion 275(33.4%). When we see the marital status of the respondents, 616 (74.7%) of the participant were married, 151(18.3%) unmarried, 45(5.5%) widowed and the remains 12(1.5%) were divorced. Educational statuses of the respondent showed that, 391(47.5%) were high school level educational status, 226(27.4%) were college and university level educational status, 118(14.3%) primary school, and the remaining 89(10.8%) were illiterate. Regarding ethnicity, 531(64.4%) were Wolaita, 133 (16.2%) were Gamo gofa, 47(5.7%) were Amehara, 46(5.6%) Gurage, 41(5%) Oromo, 20(2.4%) Tigre and 6(0.7%) Others. In this study majority of participants 359(43.6%) reported that, their average monthly income was ≥ 2001 Ethiopian Birr.

Prevalence and type of medicine available at home

Among the total Eight hundred twenty four house hold visited, 212 (25.7%) household had kept medicine at home. In two hundred twelve household 894 different types of drugs products were kept at home. Out of 212 house hold kept medicine at home (24.5%) of medicine kept at home were for current use, (41.1%) Left leftover and (34.4) anticipated future treatments. Anti pain were the first most stored types of drugs at home 196 (22%), and the second and third most kept medicine at home were Gastro intestinal drug 180(20%) and antibiotics 126(14%) and the other drugs kept in the households were Anti diabetics drug 126(14%), ORS 76(8%), Anti-spasmodic 76(8%) , Anti protozoa drug 36(4%) and CVS drugs 35(4%) all the drugs found in the households.

Factors associated with medicine available at home

The bivariate logistic regression shows those households with health professional family member [COR=5.347, 95%CI ((3.704-7.706)], self medication practice [COR = 2.986, 95%CI(2.021-4.410)], leftover medicine [COR= 3.383, 95%CI (2.700-5.448)], Knowledge on medicines if not taken without health professional consultation danger COR = 0.524, 95%CI (0.360-0.763) Do you know about rational drug use COR = 0.501, 95%CI (0.340-0.738). Medicine use by sharing COR = 0.533, 95%CI (0.361-0.785). Checking expire date of medicine during receiving from health facility COR = 0.578, 95%CI (0.380 -0.879) were associated with medicine available at home.

Variables found to be significant ($p < 0.25$) in the bivariate analyses were transferred to multivariate regression and then multivariate regression was performed. The odds medicine storing at home among health professional family member 6.11 times more likely to no health professional family member [AOR=6.110, 95%CI (4.003-9.325)], Respondents who were practice self medication practice 4.337 times more likely to kept medicine at home [AOR=4.337, 95%CI (2.726-6.901)], The odds of medicine store at home 6.24 times more likely to have leftover medicine [COR= 6.240, 95%CI (4.090-9.519)]

Health professional's family member

In this study health professional in the families have high proportion to kept medicine at home. Household with health professional family member stored medicine were 162(19.7%). Clinical nurse family member 66(38%), Pharmacy professional 32(18%) and Health officers 25(14%) which could indicate that the easy access to take medicine and self prescribing in health professional family member.

Storage place of medicine available at home

Among the households interviewed 92(43.4%) kept medicine in storage box 79(37.3%) plastic and cloth bag use to store medicine and 41(19.3%) uses Chest of drawers. Among all the respondents 824, 129 (15.7%) practice self medication to relieve their symptoms. The medicines 87(41.1%) kept at home were leftover, 73 (34.4) Anticipated future treatments (Emergency) and 52(24.5%) for current use which could indicate poor medication adherence to drug treatment. Common reasons given by respondents for having the medicines in their homes were keeping the medicine for emergency use or in an event of a similar illness; leftover drugs were also kept for future needs.

The place where medicine purchased

In this study the participant who had hoard medicine at home reported the source of their medicine which was from governmental health facility and private health facility and Friends. Out of 824 visited households, 212 (25.7%) of the respondents stored drugs at their home. The larger proportion 147(69.3%) of medicine obtained from Governmental Health Organization, 56 (26.4%) private health facility and the remaining 9(4.2%) were from their friends and neighbors.

Attitude towards medicine kept at home

There were seven questions that assess attitude of respondents who had mean score of attitude and it was $27.84 \pm$ (SD 2.232) with minimum score was 7 and maximum score of 35. The question included that if I feel discomfort should visit health facility, A person who has minor health problem is not necessary to visit health facility health facility, Disposing medicine anywhere has no problem regarding health It's necessary to taking Left over medicine when I feel similar illness, All type of medicine available at home by any means can be chewed when we feel discomfort, Without health professional consultation availing medicine at home and using at emergency time has no problem and It's important to Store any kind of medicine at home in cold and dry place.

In this study attitude was assessed by questions put on Likert's scale. The questions on Likert's scale had responses that ranged from strongly disagree to strongly agree. The scoring system used was: strongly disagree =1, Agree =2, Neutral = 3, Disagree= 4, strongly disagree =5. To avoid bias certain statements were negative and their scores were reversed while calculating the total score. The responses were summed and a total score obtained. Moreover, the mean score were calculated. Those who scored the mean score and above considered as having positive attitude and which accounts 685(83%) and scores below the mean 139 (17%) negative attitude towards medicine available at home (22, 23).

This study was conducted with the objective of determining the extent of drug available at home and associated factors in Wolaita Sodo town. The prevalence of medicine available at home was 25.7%. Further analysis of this prevalence revealed that availing medicine with health professional family member was 83% and left over medicine (52.2%) and which contributors to medicine kept are and irrational drug use. This was low compared to data reported in Gondar Mekele, Uganda and implying that there is still requires attention for improvement. There is a need for continuous health education to medicine available at home.

Medicine kept at home due to excessive prescribing, imperfect therapeutic adherence, and treatment modifications after hospitalization and oversized drug packages resulting in home storage of leftover drugs. This value seems to be similar to the findings of the previous studies done in Ethiopia Gondar and Mekele and less prevalent as compared to the studies done elsewhere Uganda and Iraq. The proportion of households with drug available in this study is lower than studies done in different parts of Ethiopia This difference may show the degree to which people awareness towards medicine available at home and its use (8, 16, 19).

Although responsible self-medication is the practice whereby individuals treat their ailments and conditions with medicines which are approved and available without prescription, and which are safe and effective when used as directed by health professionals, it will lead to unintended effect if inappropriately used. The result from this study revealed that the prevalence of self-mediation among Sodo town surveyed house hold reported 129 (15.7%) which was much more less study conducted in different part of Ethiopia. Recent similar studies conducted in different areas such as the Gondar, Mekele, and Nekemt vary in their estimation of the percentage of peoples who practice self-medication, with prevalence rates that range from about 38.5% to 95.5% (16, 24).

This has to be considered seriously because uncontrolled and excessive antibiotic use resulted from home drug storage could lead to antimicrobial drug resistance. The majority of the drugs were stored in a chest of drawer (43.4%) and plastic and cloth bag (37.3%). This finding is similar with the findings reported in Mekele. From this, it can be easily understood that the place and condition of storage of drugs were not appropriate and in fact the storage places were accessible to children who can lead to accidental ingestion of oral drugs by children(16).

Health professional in the families have high proportion of home drug store at home. Anti pain/Analgesic, Gastro intestinal tract drug and antibiotics were the most frequently stored type of drug at home. High proportion of anti-biotic kept at home result on excessive re-utilization and lead to antimicrobial drug resistance. Therefore, extensive health education has to be in place to improve appropriate utilization of drug, the correct disposal the avoidance of self medication with antibiotics and leftover medicine(28).

The present study shows that 34.4% of the medicines available at home were for future anticipated use and 41.1% were left over medicine. The same reason was also reported in different studies. The mean number of

drugs per household was 0.257 in this study. This difference may show the degree to which people knowledge about drug, self medication and medicine use. However, the result of this study was lower than community based survey done in different part of Ethiopia (16, 19, 28). The major reasons for availing medicine in this study were for treating similar illness in the future, left over and emergency anticipated use. However, a study conducted in Iraq mentioned that the reason for kept medicine at home could be due to leftovers and for future use. The duration of storage and the manner they are used should be considered seriously (19). The rate of inappropriate storage condition of medicine in this study was 37.3% compared to 26% in Sudan and 57% in Iraq (19, 25).

Therefore, appropriate educational campaign has to be in place to raise the awareness of the society on the good utilization of medicine, the avoidance of leftover medicine, the correct disposal of leftover drugs, and harmful effects of consuming non-prescribed medicine (17, 29, 26).

V. Conclusion

Our findings suggest that the prevalence of medicine available at home in Wolaita Sodo town was 25.7%. Anti-pain, Gastro intestinal tract drug and antibiotics were found to be the most commonly stored drugs. Most drugs kept at home were not appropriately labeled or stored at a safe place. Health professional family member, left over medicine and self medication practice in the households were significantly associated with drug storage at home.

This study showed that the majority of the participants kept the unused medications in their home threw into the trash and flushing into the toilet as possible disposal methods which were not accomplished as WHO guidelines recommend and may pose a problem to the environment, animals and facilitate drug-resistance bacteria. Even though most of the participants were aware of the bad effects of inappropriate disposal of unused medications, they did not know WHO acceptable disposal methods. Thus, Public education regarding the appropriate handling and use of medicines must also be given.

VI. Recommendation

Based on the findings of this study the following recommendations are suggested

Medicine available at home is the commonest practices among the house hold in the study area and majority of drugs that were consumed for treating similar illness in the future as a self medication and of which the majority of drug available at home were ant pain/analgesics, drug acting on gastro intestinal tract and antibiotics which are exposed for microbial resistance of medicine. So, health professionals and others concerned bodies in the town administration; like the zonal Health department, Town and woreda health office and FMHACA should work to increase the awareness of community about the effect of medicine available at home and self medication practices to prevent unexpected resistance micro organism on medicine.

Public education on the matter of medicine availability at home and self medication practices with collaboration of health extension professional and other health professionals at the community level should be provided. In addition incorporation of community education on treatment compliance, risks of home medicine storage and their use without medical consultation and proper disposal of leftover drugs in patient care will go a long way in solving the problem of home drug storage.

Pharmacy personnel must demonstrate their willingness to be responsible for the patient's drug therapy and should effectively counsel/provide drug information when dispensing drugs.

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