Available online at www.joac.info

ISSN: 2278-1862

Journal of Applicable Chemistry

2017, 6 (3): 423-432

(International Peer Reviewed Journal)

Assessment of Health Care Providers' Knowledge, Attitude and Practice on patient safety and Medication Error Reporting

Selamu Kebamo[1*], Regea Dabsu[2], Mulugeta Kebamo[3] and Chennupati Venkata Suresh[1]

1. Department of Pharmacy, College of Medical and Health Sciences, Wollega University, Nekemte, PO Box: 395, **ETHIOPIA**
2. Department of Medical Laboratory Sciences, College of Medical and Health Sciences, Wollega University, Nekemte, PO Box: 395, **ETHIOPIA**
3. Agricaltural and livestock administrative office, Gibe woreda, Homecho, **ETHIOPIA**

Email: skebamo@yahoo.com

Accepted on 20th May 2017, Published online on 27th May 2017

ABSTRACT

Medication error (ME) is a threat to patient safety (PS). It accounts for prolonged hospitalization, extra medical interventions, morbidity and even death. Awareness about the knowledge, attitude and practice (KAP) towards PS and ME reporting of health care professionals (HCPs) is a base to improve the quality of health services whereby reducing the risk of ME. Hence, the main aim of this study was to assess health care professionals' KAP on patient safety and ME reporting at selected health institutions. A cross-sectional survey using self-administered questionnaire was conducted in a selected four health facilities during March to June 2016. A total of 218 HCPs, namely: physicians, nurses, midwives and pharmacy personnel participated in the study. The data were collected by trained nurses and graduating pharmacy students under the supervision of the authors. Majority of the participants (83.3%) had inadequate knowledge towards PS and ME reporting, although there appeared to be some differences across professions. Similarly, the majority of the respondents' (83.8%) had an unfavorable attitude regarding PS and ME reporting, with the physicians being the largest proportion (92.3%) of the respondents, followed by the nurses (85.4). Moreover, about 82% of the respondents were not practicing reporting ME, with midwives (92.3%) taking the highest proportion followed by physicians (84.6%). The main reason for not reporting the encountered ME was insufficient clinical knowledge to identify ME (18.17%) followed by fear of punishment (16.2%) and the unavailability of reporting format (12.3%).The overall knowledge, attitude and practice of health care providers on the PS and ME reporting were not favorable and satisfactory. This might be due to individual and/or system related factors such as insufficient clinical knowledge to identify ME, fear of disciplinary action and unavailability of reporting formats. Thus, sustainable on job training should be given to health care providers, by giving special emphasis to physicians, nurses and midwives in order to improve patient safety and minimize the risk of ME.

Keywords: Patient safety, Medication error reporting, Knowledge, Attitude, Practice, Ethiopia.

INTRODUCTION

Medication error is defined as [1] any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, healthcare products, procedures, and systems, including prescribing order, communication, product labeling, packaging, and nomenclature, compounding, dispensing, distribution, administration, education, monitoring and use.

The issue of proper medication use and safety is at the forefront of public health concerns globally. Medication errors have serious direct and indirect results, and are usually the consequence of breakdowns in a system of care. Direct results include patient harm as well as increased healthcare costs. For example, 5% of all medication errors reported to the US Food and Drug Administration (FDA) in 2001 was fatal [2], and patient stays associated with medication errors increased by 4.6 days, with a resulting cost increase of $4685 per patient [3].Indirect results include harm to HCPs in terms of professional and personal status, confidence, and practice [4]. While the medication error rates in hospitals range from 4.4 to 59.1%, worldwide reporting of medication errors is less than 5% [5].

The timely and accurate reporting of medication errors should be an essential part of a healthcare organization's overall risk-reduction strategy. Health care providers are expected to document medication errors in the medical record and report to the concerned body as soon as possible to facilitate remedial action to the event. Without the formal and adequate report, patient safety improvement opportunities are severely limited [6]. The reporting of medication errors or events is an essential activity for improving patient safety [7]. It provides data that can be used in follow-up activities, such as root cause and other strategic measures that can prevent future errors. Although error management involves short-term actions focused on a specific error occurrence, error reporting and follow-up are geared toward understanding why errors occur and generating long-term improvements in patient safety [6].

No matter what reporting mechanisms, policies, or procedures are in place, reporting medication errors remains dependent on the HCP's ability to detect medication errors and individual practitioner's decision making to report medication errors. The Reporting systems success are dependent on the HCP's ability to recognize an error has occurred; the belief that the error warrants reporting; belief that she/he has committed the error and willingness to overcome the embarrassment and fear of retaliation for having committed a medication error [4].

Adequate knowledge, favorable attitude of the health care providers and good and effective medication error reporting system is a necessary tool to evaluate and to take appropriate actions towards medication errors; thus, preventing or reducing harm to the patients. The success of a reporting system is determined by the attitudes and perceptions of frontline care providers. Thus, prior to implementing an event reporting system, an assessment of the KAP of care providers should be conducted to identify critical barriers to reporting [8]. Therefore, the purpose of the present study was to assess physicians', pharmacists', nurses' and midwives' KAPs on patient safety and medication error reporting and the perceived barriers to reporting ME.

MATERIALS AND METHODS

Study Design and Period

A health facility based cross-sectional study was conducted from March to June 2016.

Study Setting

This study was conducted in selected health institutions, namely: Nekemte Referral Hospital (NRH), Gimbi General Hospital (GGH), Calelaqi and Nekemte health centers (HCs) and found in the west

Wollega zone, Oromia regional state, Ethiopia. Gimbi General Hospital and Nekemte Referral Hospital are found in Gimbi and Nekemte town respectively. These hospitals deliver health services in many specialty areas. These include gynecology and obstetrics, pediatrics and child health, internal medicine, ophthalmology, intensive care unit (ICU), Outpatient Department (OPD) and Pharmacy. Moreover, NRH provides health care services to clients with different referral and non- referral health problems.

Study Participants

Selected health care professionals, namely: physicians, Nurses, midwives and pharmacy personnel, who have been involved in patient treatment and care in the different units of the hospitals during data collection and who have worked at least for six months prior to the conduct of the data collection were included in this study.

Sample size and Sampling Techniques

Since the number of the health care providers was manageable, all the health care providers working in selected health institutions, fulfilling the inclusion criteria were included in the study.

Study Tool, Data Collection, Data quality control and Ethical Considerations

Survey instruments were adapted from different journals regarding ME. These were used, instead of constructing our own, to ensure reliability of the questionnaire and to allow comparison of results with previous studies. The questionnaire was divided into four sections. Corresponding sections were used to obtain the demographics of the health practitioners, to get information about their knowledge, to assess their attitude and practices on PS and ME reporting.

Before the actual use of the survey tool, its content was checked to contextualize the content and verify language simplicity and sequence. Then, the survey tool was pre-tested at Nejo General Hospital and participants in the pre-test were contacted to give their general feeling, comments and problems encountered while responding the questions. Finally, relevant modifications of the tools were made before the start of data collection.

A letter of request was forwarded to the medical director of the health facilities to seek permits for the conduct of the survey and an oral consent was obtained from each study participant. Data were collected through interviewer-administered data collection tool. Trained individuals facilitated the data collection from the different units of the facilities. Each questionnaire was immediately checked for its completeness and consistency. No personal identification or name was used and individual's information was not disclosed to other person or party. Participants were informed that they had full right to participate or refuse participation in the study.

Measurements

Socio-Demographic characteristics

Demographic characteristics included in the study were age, gender, educational qualification, years of experience, history of exposure to a patient with ME and get training on ME and PS. These items were viewed as potential factors influencing knowledge, attitude and practice of ME reporting.

Knowledge on Patient Safety and Medication Error Reporting

Ten questions on knowledge were assessed by multiple choice options. Health practitioners who correctly answered six items were classified as knowledgeable and those getting scores below six were considered as non- knowledgeable.

Attitude on Patient Safety and Medication Error Reporting

Twenty-three questions on health practitioners' attitudes toward medication error were evaluated on a 5-point Likert's scale, ranging from 'strongly agree' to 'strongly disagree'. Their responses were summated and health practitioners who got a score of 70 - 91 were considered to have a favorable attitude towards medication error reporting whereas those scoring 32 – 69 were classified as having an unfavorable attitude.

Practices on PS and ME Reporting

The final section inquired about the health practitioners' identification, recording and actual reporting, and the reason for under-reporting of a medication error by 19 multiple items. Health practitioners who correctly answered 12 items were considered to be practicing medication error reporting whereas those scoring below 12 were classified as not practicing medication error reporting.

Data Analysis

The collected data was then coded, entered, cleaned and analyzed using SPSS version 20. Cross-tabulation of the variables was examined using the Chi-square test distribution accepting $P < 0.05$ as significant. This encompassed analyses at the level of Knowledge, attitude and practice of ME reporting of healthcare practitioners. Pearson chi-square test was used to assess whether there is a significant difference or not on Knowledge, attitude and practice of ME reporting among healthcare providers. Binary and logistic regression was used to determine the confounding factors among socio-demographic characteristics of the participants that affect knowledge, attitude and practice of ME reporting. Frequency, percentage and mean ± SD were used to analyze the socio-demographic data of the health practitioners such as age, gender, educational qualification, total years of experience, history of medication error encountered and get training on ME and patient safety.

RESULTS AND DISCUSSION

A total of 231 questionnaires was distributed to the health care providers and 218 were collected, giving a response rate of 94.4%. As indicated in Table 1, more than half (53.7 %) of the respondents were male and over 78.9 % were under the age of 35 years, with a mean age of 31.2 (± 6.0) years. Regarding total years of practice in the healthcare system, about 60% of the respondents had less than 5 years of experience, with mean total years of experience 5.7 (± 4.2) years. Nearly 50% of the respondents had a history of exposure to patients with ME in last 12 months and only about one-fourth of the participants got training on, at least once, ME & patient Safety in their career (Table 1).

Table 1: Socio-demographic characteristics distribution of the study participants (n=218), March to June 2016

Variables		Physician (n=26) No. (%)	Nurse (n=137) No. (%)	Midwife (n=27) No. (%)	Pharmacy Personnel (n=26) No. (%)	Total (n=218) No. (%)
Age (years)	≤ 35	22 (84.6)	102(74.5)	24(88.9)	22(84.6)	172 (78.9)
	> 35	4 (15.4)	35(25.5)	3(11.1)	4(15.4)	46 (21.1)
	Mn± SD	30.7 ± 5.0	31.9 ± 6.6	29.8±4.3	29.8±5.2	31.2 ± 6.0
Gender	Male	23(88.5)	58(42.6)	17(63.0)	18(72.0)	116 (53.7)
	Female	3(11.5)	78(57.4)	10(37.0)	7(28.0)	100 (46.3)
Educational qualification	Diploma	NA	46(35.7)	5(19.2)	11(42.3)	62 (30.1)
	Degree	NA	83(64.3)	21(80.8)	15(57.7)	119 (57.8)
	GP	17(65.4)	NA	NA	NA	17 (8.3)
	Specialist	8(30.8)	NA	NA	NA	8 (3.9)
Total years of work experience in professional career	≤ 5	22 (84.6)	77(56.2)	15(55.6)	16 (61.5)	131(60.1)
	5-10	2 (7.7)	54(39.4)	10(37.0)	10 (38.5)	77 (35.3)
	>10	2 (7.7)	6(4.4)	2(7.4)	0	10 (4.6)
	Mn± SD	4.8 ±2.7	5.8 ±3.8	6.6±7.6	5.0±2.6	5.7 ± 4.2
History of exposure to patient with ME in last 12 months	Yes	12(46.2)	72(52.6)	8 (30.8)	13(54.2)	107 (49.8)
	No	14(53.8)	65(47.4)	18(69.2)	11(45.8)	108 (50.2)

Get training on ME & patient Safety at least once?	Yes	10 (38.5)	28 (21.1)	4 (15.4)	10 (41.7)	52 (26.4)
	No	16 (61.5)	105(78.9)	22 84.6)	14 (58.3)	159 (75.4)

Only 16.7% of health practitioners were knowledgeable regarding medication error while the rest of the respondents were said to be non-knowledgeable. The level of knowledge among these health practitioners was statistically significantly different, with the pharmacy personnel being gathered the highest percentage (34.6%) of knowledgeable respondents followed by the physicians (26.9%), Table 2.

Table 2: Respondents' knowledge on Patient safety and medication error reporting, March to June 2016

Knowledge	Physician No. (%)	Nurse No. (%)	Midwife No. (%)	Pharmacy personnel No. (%)	Total No. (%)	χ^2 ***(p-value)***
Knowledgeable	7(26.9)	18(13.1)	2(7.4)	9(34.6)	36(16.7)	10.894 (0.012)
Non-Knowledgeable	19(73.1)	119(86.9)	25(92.6)	17(65.4)	180(83.3)	

As shown in Table 3, the majority of the respondents' (83.8%) had an unfavorable attitude on medication error reporting and patient safety, with the physicians being gathered the highest percentage (92.3%) of the respondents, followed by the nurses (85.4) and the midwives (85.2%). Statistical test results revealed that there was a significant difference in health practitioners' attitude towards medication error reporting and patient safety. The pharmacy personnel had a more favorable attitude (34.6%) than midwives (14.8%), nurses (14.6%) and physicians (7.7%).

Table 3: Respondents' attitude on patient safety and medication error reporting, March to June 2016

Attitude	Physician No. (%)	Nurse No. (%)	Midwife No. (%)	Pharmacy personnel No. (%)	Total No. (%)	χ^2 ***(p-value)***
Favorable	2(7.7)	20(14.6)	4(14.8)	9(34.6)	35(16.2)	8.177 (0.042)
Unfavorable	24(92.3)	117(85.4)	23(85.2)	17 (65.4)	181(83.8)	

Close to 82% of the respondents were not practicing reporting ME, with midwives (92.3%) taking the highest proportion followed by physicians (84.6%), pharmacy personnel (83.3%) and nurses (78.8%). There was no statistically significant difference in the practice of health practitioners on medication error reporting (Table 4). The main reason for not reporting the encountered ME was insufficient clinical knowledge to identify ME (18.17%) followed by fear of punishment (16.2%), reporting one report does not make a difference (14.7%), and unavailability of reporting format (12.3%) (See Figure 1).

Table 4: Respondents' practice of medication error reporting, March to June 2016

Practice	Physician No. (%)	Nurse No. (%)	Midwife No. (%)	Pharmacy personnel No. (%)	Total No. (%)	χ^2 ***(p-value)***
Practicing	4(15.4)	29 (21.2)	2(7.7)	4(16.7)	39(18.3)	2.90 (0.407)
Not practicing	22(84.6)	108(78.8)	24(92.3)	20(83.3)	174(81.7)	

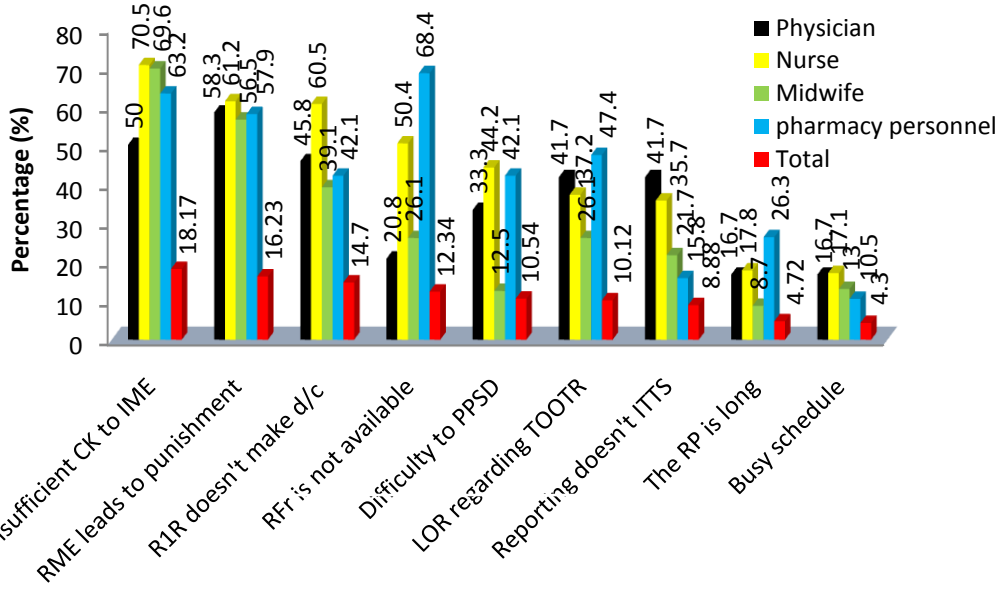

Figure 1: Reasons for not reporting ME when it is encountered, March to June 2016

CK--Clinical Knowledge; IME--Identify ME;d/c—difference; RME--Reporting ME;
R1R--Reporting one report; RFr--Reporting Format; PPSD--Pin point suspected drug;
LOL--Lack of response; TOOTR- The outcome of the report; ITTS--Influence the treatment scheme
RP-- Reporting process

Respondents' characteristics and KAPs on medication error reporting and PS

Table-4 shows the relationship of respondents' demographics to their KAPs on medication error reporting and patient safety. Variables such as educational qualification, history of exposure to a patient with ME, years of experience in their career and get training on ME & patient Safety were analyzed. Among these respondents' demographic characteristics only three of them, namely: educational qualification, total years of experience in professional career and involvement in training were found to significantly affect knowledge of the practitioners. None of the Socio-demographic variables of the respondents, except being pharmacy professional, were found to influence the attitude of the HCPs. The medication error reporting practice of the HCPs'was significantly affected by their history of exposure to a patient with ME.

Table 5: Relationship of respondents' demographics with KAPs of ME Reporting and patient safety, March to June 2016

Confounding Variable		**Knowledge**			**Attitude**			**Practice**		
		n	COR (95%CI)	AOR (95%CI)	n	COR (95%CI)	AOR (95%CI)	n	COR (95%CI)	AOR (95%CI)
Educational qualification	Diploma	62	**0.19 (0.04, 0.83)***	1.20 (0.49, 2.97)	60	1.40 (0.64, 3.06)	1.33 (0.59, 3.02)	60	0.63 (0.25, 1.58)	0.69 (0.26, 1.83)
	Degree	119	0	0	116	0	0	116	0	0
	GP	17	**0.19 (0.04, 0.90)***	1.96 (0.45, 8.58)	18	0.70 (0.15, 3.32)	0.76 (0.49, 3.90)	17	0.30 (0.04, 2.42)	0.52 (0.06, 4.62)
	Specialist	8	**1.21 (1.03, 1.38)****	**6.91 (1.47, 32.50)***	8	0.99 (0.01, 0.30)	0.12 (0.08, 2.76)	8	2.91 (0.64, 13.17)	2.76 (0.54, 14.10)
Total	≤ 5	131	0.71	0.77	122	1.09	1.01	131	**0.36**	0.51

experience in professional career (years)			(0.34, 1.48)	(0.32, 1.86)		(0.51, 2.30)	(0.49, 2.75)		**(0.17, 0.76)****	(0.21, 1.23)
	5-10	83	0	0	75	0	0	80	**0**	0
	>10	4	**4.19 (1.55, 32.03)****	**3.01 (1.01, 28.01)***	4	0.11 (0.08, 1.19)	0.09 (0.01, 1.09)	4	1.00 (0.10, 10.17)	1.90 (0.16, 22.34)
History of exposure to patient with ME in last 12 months	Yes	107	2.00 (0.95, 4.20)	1.98 (0.85, 4.61)	96	0.76 (0.37, 1.60)	0.79 (0.35, 1.80)	96	**4.22 (1.82, 9.79)*****	**2.83 (1.12, 7.13)***
	No	108	0	0	105	0	0	105	0	0
Profession	Midwife	27	0.53 (0.12, 2.43)	0.59 (0.12, 2.91)	27	1.02 (0.32, 3.26)	1.12 (0.34, 3.74)	26	0.41 (0.09, 1.87)	0.55 (0.11, 2.66)
	Nurse	137	0	0	137	0	0	137	0	0
	Physician	26	2.44 (0.90, 6.61)	2.21 (0.87, 5.89)	26	0.49 (0.11, 2.23)	0.41 (0.07, 2.19)	26	0.90 (0.28, 2.86)	1.01 (0.25, 2.93)
	Pharmacy personnel	26	**3.50 (1.36, 9.03)****	**3.46 (1.25, 9.56)***	26	**3.10 (1.21, 7.90)***	**2.78 (1.04, 7.47)***	24	1.30 (0.44, 3.85)	1.66 (0.53, 5.22)
Get Training on ME & patient Safety	Yes	52	**2.82 (1.32, 6.03)****	**2.03 (1.87, 4.77)***	52	1.67 (0.75, 3.73)	1.50 (0.60, 3.63)	52	1.47 (0.68, 3.16)	1.06 (0.43, 2.64)
	No	159	**0**		159	0	0	159	0	0

*p < 0.05, **p < 0.01, ***p < 0.001, COR= crude odds ratio, AOR= Adjusted odds ratio, CI= Confidence interval, GP=General practitioner

This study assessed the knowledge, attitudes and practice of health care providers towards patient safety and ME reporting in selected health institutions. The study revealed that generally, the majority of the health care providers were non-knowledgeable regarding patient safety and ME reporting despite the fact that about half of them have already encountered patients with ME. This finding is in agreement with the study conducted by Osborne *et al.* in which the authors found that 15.8% of the nurses were unsure as to what situation constituted a medication error, and 14% were not sure when to report the error [9]. This might be due to inadequate training of the practitioners on PS and ME reporting system in their health settings in particular and the ME reporting system of the country in general [10].

Of the knowledgeable respondents, regarding PS and ME, pharmacy personnel take the highest proportion followed by physicians (see Table 2). This implies that pharmacists, being regarded as drug experts, have more advantage when it comes to information about drugs; thus, increased ability to identify more medication errors. This finding is concordant with the study which is done in the Philippines(Carandang et al. 2015) and discordant with a study which is done in India [11]. Comparably, the better awareness of the pharmacy personnel regarding PS and ME reporting might be due to their relatively higher involvement in on job training and higher exposure to patients experiencing ME [10,12,13]. On a similar study conducted by Cook and his colleagues', they stated that the pharmacists were more confident in their ability to recognize the error, making them more willing to report medication errors [14]. Moreover, the multiple logistic regression analysis showed that the level of knowledge of the HCPs on patient safety and ME reporting was found to be the function of their educational qualification and total years of experience in their professional career [13].

The attitude of health practitioners is vital to make ME reporting accepted and practiced through the health care system. According to Sarvadikar *et al.,* doctors were unlikely to report less serious medication errors whereas nurses and pharmacists were likely to report less-serious as well as serious medication errors despite their fears of receiving disciplinary action [15]. Similarly, on a study conducted by Al-faouri *et al*., most reporters of ME were pharmacists, followed by nurses and then others including physicians [16]. In a study conducted in Saudi Arabia, most doctors did not think it was necessary to disclose an error if it did not severely harm the patient. It is commonly accepted among the majority of doctors that errors are an "inevitable" and potentially unmanageable feature of medical work and that incident reporting is therefore "pointless" [17].

Under-reporting is continued as a major threat to the hospitals' ME reporting process [16]. The result of this survey shows that the HCPs are not only non-knowledgeable and possessing unfavorable attitude but also the majority of them are not practicing ME reporting. Among Socio-demographic characteristics of the participants, only history of exposure to patients with ME was found to positively affect the practice of ME reporting. As compared to HCPs who did not come across patient with ME, those HCPS who encountered patient with ME was about three times more likely to report ME (AOR=2.83, 95%CI(1.12, 7.13)). This implies that as health practitioners encounter patient with medication errors, they could aware of the mistakes and share experience from their colleagues and develop a habit of ME reporting [10].

Reporting medication-error is both a legal and ethical obligation for every health care provider and is crucial in improving patient safety [16]. Prevention of medication errors is linked to accurate and adequate reporting of medication errors [4]. Reporting of medication errors set up a process so that errors can be communicated to key stakeholders. Once data are collected and analyzed, relevant authorities/agencies can evaluate causes and revise or create processes to reduce the risk of errors [18]. Therefore, staffs should be encouraged to report ME. This is because underreporting prevents efforts to avoid future errors. Hence, there will be no real improvement in medication safety without efficient reporting of ME.

Barriers to medication error reporting are multifactorial in nature. In the current study, the most common barriers to reporting medication errors among HCPs were, lack of sufficient clinical knowledge on how to identify ME; fear of consequences; reporting one report does not make a difference; unavailability of the reporting format; and lack of response regarding the report; even though, differences were noted across the profession (see Figure 1). Studies done elsewhere in different parts of the world reported similar findings (13,19,20). It is estimated that 95% of MEs are not reported because staff fears of punishment [3]. Fears of punishment have led to a norm of silence, where silence kills. To eliminate this barrier, individuals and organizations must be able to move from individual blame toward a culture of safety, where the blame for errors is eliminated and reporting is rewarded in order to increase reporting of all types of errors [21]. According to Hartnell *et al.,* health practitioners would be more willing to report medication errors if reporting were made easier, if they were adequately educated about reporting, and if they received timely feedback [22].

CONCLUSIONS

The overall knowledge, attitude and practice of HCPs on PS and ME reporting were not favorable and satisfactory. Thus, there is a need for improvement on the health practitioner's KAP on ME reporting and PS by giving sustainable on the job training. The training program need to give especial emphasis on physicians, nurses and midwives as these care providers were found to have either more unfavorable attitude or inadequate knowledge and/or practice on PS and ME reporting. Educational programs have to be prepared and conducted to create awareness on how to report MEs and stimulate health professionals' active participation in the MEs reporting program. The national regulator body for ME reporting, FMHACA, should provide feedback on reported ME so that it can be used as an additional means of

providing education whereby ensuring safe health care service. All medical professionals need to take responsibility in efforts to identify, monitor, evaluate and prevent medication errors, and believes that health care organizations should establish a non-threatening, a non-punitive and confidential environment that encourages health professionals to report medication errors in a timely manner.

Under-reporting still remains endemic among healthcare professionals, and this limits the capacity of healthcare workers and organizations to learn from the errors. Also, because of under-reporting, the true scale and extent of the problem, and its impact on patient safety, remain underestimated. Thus, the nature of barriers and enablers to ME reporting and the improvements in patient safety at all levels needs observational prospective study.

REFERENCES

[1] NCCMERP. National Coordinating Council for Medication Error Reporting and Prevention, **2016**
[2] Thomas MR, Holquist C, Phillips J. Medication error reports to FDA show a mixed bag, FdaSaf Page. **2001**, 145(19):23.
[3] Hume M. Changing hospital culture, systems reduce drug errors. Exec Solut Heal Manage. **1999**, 2(4):1–9.
[4] Mayo AM, Duncan D, Nurse Perceptions of Medication Errors What We Need to Know for Patient Safety, **2004**, 19(3):209–17.
[5] Huda M, Dibbi et al. Causes and outcome of medication error in hospitalized patients, Saudi Mj. **2006**, 27(10):1489–92.
[6] Uribe CL, Schweikhart SB, Pathak DS, Dow M, Marsh GB. Perceived barriers to medication error reporting: An exploratory investigation, *J Health Manag*, **2002**, 47(4):263–80.
[7] Elder NC, Graham D, Brandt E. Barriers and Motivators for Making Error Reports from Family Medicine Offices: A Report from the American Academy of Family Physicians National Research Network (AAFP NRN), **2007**, 115–23.
[8] Harper ML, Helmreich RL. Identifying Barriers to the Success of a Reporting System, Adv Patient Saf, **2006**, Vol. 3:167–80.
[9] Osborne J, Blais K, Hayes JS. Nurses' perceptions: when is it a medication error? J Nurs Adm, **1999**, 29(4):33–8.
[10] Carandang RR, Resuello D, Hocson GB, Respicio KM, Reynoso C. Knowledge, Attitude and Practices on Medication Error Reporting among Health Practitioners from Hospitals in Manila, SchAcadJournal Pharm Sajp, **2015**, 4(5):293–300.
[11] Jaykare SC. Medication errors, what health care providers think? A knowledge, attitude and practice survey, Asian J Pharm Clin Res, **2013**, 6(4):57–9.
[12] Khammarnia M, Ravangard R, Barfar E, Setoodehzadeh F. Medical errors and barriers to reporting in ten Hospitals in southern Iran, Malays J Med Sci, **2015**, 22(4):57–63.
[13] Mohammed A, Alduais S, Mogali S, Shabrain B Al, Enazi A Al, Barriers and strategies of reporting medical errors in public hospitals in Riyadh city: A survey-study, **2014**, 3(5):72–85.
[14] Cook AF, Hoas H, Guttmannova K, Joyner JC, An error by any other name. Am J Nurs, **2004**, 104(6):32–43.
[15] Sarvadikar A, Prescott G, Williams D, Attitudes to reporting medication error among differing healthcare professionals, *Eur J ClinPharmacol*, **2010**, 66(8):843–53.
[16] Al-faouri IG, Ph D, Hayajneh WA, Habboush DM, A Five Years Retrospective Study of Reported Medication Incidents at a Jordanian Teaching Hospital : Patterns and Trends Jordan University of

Science and Technology College of Medicine Jordan University of Science and Technology Risk management Coordinato, **2014**, 4(5):280–7.

[17] Alsafi E, Baharoon S, Ahmed A, Al-Jahdali HH, Al Zahroni S, Al Sayyari A. Physicians' knowledge and practice towards medical error reporting: a cross-sectional hospital-based study in Saudi Arabia, *East Mediterr Health J*. **2015**, 21(9):655–64.

[18] Evidence Scan: Improving safety in primary care, The Health foundation; **2011**.

[19] Elder NC, Graham D, Brandt E, Hickner J, Barriers and Motivators for Making Error Reports from Family Medicine Offices: A Report from the American Academy of Family Physicians National Research Network (AAFP NRN), *J Am Board Fam Med*, **2007**, 20(2):115–23.

[20] Terzibanjan A, Laaksonen R, Weiss M, Airaksinen M, Wuliji T, Kingdom U et al, Medication error reporting systems – lessons learnt executive summary of the findings, **2007,** (Table 1): 1–7.

[21] Wolf ZR, Hughes RG, Error Reporting and Disclosure. *Rockv Agency Healthc Res Qual Us,* **2008**.

[22] Hartnell N, MacKinnon N, Sketris I, Fleming M, Identifying, understanding and overcoming barriers to medication error reporting in hospitals: a focus group study, Birtish Med J QualSaf. **2012**, 21(5):361–8.

AUTHORS' ADDRESSES

1. **Selamu Kebamo**
Department of Pharmacy,
College of Medical and Health Sciences,
Wollega University, Nekemte, Ethiopia
E-mail: skebamo@yahoo.com**,**
Phone: +251910197950, Fax: 0576617980

2. **Dr. Chennupati Venkata Suresh**
Associate Professor,
Department of Pharmacy,
College of Medical and Health Sciences,
Wollega University, Nekemte, Ethiopia
E-mail: suresh@wollegauniversity.edu.et
Phone: +251967418207

3. **Regea Dabsu**
Department of Medical Laboratory Sciences,
College of Medical and Health Sciences,
Wollega University, Nekemte, Ethiopia
E-mail: regeadabsu@gmail.com**,**
Phone: +251917844345

4. **Mulugeta Kebamo**
Agricaltural and livestock administrative office,
Gibe woreda, Homecho, Ethiopia.
E-mail: Skebamo.sk@gmail.com,
Phone: +251940318400