

Practice and Associated Factors Towards Infection Control Measures in Delivery Room among Health Workers in Shone Badawacho, Southern Ethiopia, January 2020.

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ABSTRACT

Background: Infection in healthcare workers is a major public health problem in most developing countries. Infections acquired as a result of poor practice are a major health concern, contributing to increased morbidity, mortality worldwide. Although prevention of health-worker related infections is central to the delivery of high-quality care and most of these infections can be prevented with relatively low cost, many health facilities have no effective prevention programs. Improving health staff behavioural change and developing infection prevention guidelines is required. Therefore the aim of this study was to assess practice and associated factors towards infection control measures in the delivery room among Health workers in Shone Badawacho, Hadyia Zone Ethiopia.

Methods: A Hospital-based cross-sectional study was conducted in Shone Hospital, Ethiopia from January 1 to February 30/2020. A total of 217 health care workers were included and binary and multiple logistic regressions were used to see the association of variable with the practice of infection prevention.

Result: Healthcare workers' (HCWs) practice on infection prevention control measures was 53.9% and the remaining 46.1% demonstrated it poorly. Participants whose age greater than 50 years [AOR=1.48, 95% CI [1.99-2.36], take infection prevention training (AOR=6.68, 95% CI [1.57-20.73] and, know infection prevention guideline [AOR=1.92, 95% CI [1.31-2.73] were more likely practicing infection prevention than others. However, male health workers were 62% less likely practicing infection prevention than female workers [AOR=0.38, 95% CI [0.55-0.770] and those who have much workload were 30% less likely practiced IPP than others [AOR= 0.70 CI 95% [0.120-0.54].

Conclusion: The overall practice of infection prevention was found to be low and most practiced poorly. Therefore improving institutional supplies like hand hygiene material, PPE, waste disposal

materials and developing safe infection prevention programs/guidelines and training of workers with the up-to-date infection prevention guidelines is recommended.

Keywords: Practice, Infection prevention, infection control measure, Delivery room.

Introduction

Infection Control is an important measure practiced by healthcare workers in healthcare facilities to reduce transmission and acquisition of infectious agents using Standard precautions (1). The term standard precautions are replacing 'universal precautions' as it expands the coverage of universal precautions by recognizing that anybody fluid may contain contagious and harmful microorganisms. Standard precautions include hand hygiene, use of appropriate personal protective equipment (PPE), use of the aseptic technique to reduce healthcare workers exposure to microorganisms and management of sharps, blood spills, linen, and waste to maintain a safe environment (1, 2)

Prevention and management of infection is the responsibility of all staff working in health and social care, and an integral element of patient safety programs. It is applicable to all health and social care organizations, regardless of the client/patient setting or care provider. Infection or disease may be caused by different groups of micro-organisms such as bacteria, fungi, viruses or prions and can result in a wide variety of infections (1, 3, 4). Failure to follow proper infection prevention practices puts healthcare workers, clients/patients, and communities at risk (5). Despite the increases of highly contagious infections, an infection prevention practice among healthcare workers is unknown in many developing countries (2, 6). Health care workers in the delivery room are constantly exposed to infections. Many of which can cause serious or even lethal infections. Midwives working in a labour room, in particular, are often exposed to various infections during the course of carrying out their activities (2, 3, 7).

In India, standard infection control procedures were followed by most health care workers, but health workers don't use alcohol for hand cleaning and in more than 70% of facilities are reused surgical gloves, especially for vaginal examinations in the labour room regardless of the availability of equipment and supplies. Only 15% of facilities reported that wiping of surfaces was done immediately after each delivery in labour rooms(8).

In sub-Saharan African countries including Ethiopia, infections acquired in healthcare facilities are a major public health concern, contributing to increased morbidity, mortality(7). In Ethiopia, infection prevention is one of the common problems observed in the delivery room in many facilities. Unsafe practices like unsafe instrument processing practices were frequently observed from healthcare workers, which reflecting a potentially common problem at public healthcare facilities(7, 9). Many health care workers' had good knowledge and attitude toward infection prevention but the practice of health care workers towards infection control was not sufficient enough(10, 11).

Healthcare poor practices in infection prevention measures in the delivery room contribute to high rates of hospital-acquired infections this leads to a prolonged hospital stay, it increases morbidity and mortality rate which affects the health care system.

Methods

Study area and setting

Shone is the major town of Badawacho, Hadiya Zone, Southern Ethiopia. Its geographical coordinates are 7° 8' 0" North, 37° 57' 0" East. The major landmarks are St Georgis Orthodox Church and the Shone Hospital Centre. Badawacho was one of the 77 woredas in the Southern Nations, Nationalities and Peoples' Region of Ethiopia. It was bordered on the south by the Wolayita Zone, on the west and north by the Kembata Tembaro Zone, and on the east by the Bilate River which separates it from the Oromia Region. The major town in Badawacho was Shone. Badawacho was separated for Mirab Badawacho and Misraq Badawachoworedas.

Study design and period

A quantitative Hospital-based descriptive cross-sectional study design was conducted from January 1-February 30/2020.

Source population

All health professionals working in Shone Badawachoworeda in the Year 2020

Challenges that emerged included management processes (e.g. decision-making and problem-solving modalities), human resource shortages, and physical infrastructure (e.g. space, water, and electrical supplies)(8, 12). A study conducted in Ethiopia revealed that age, lengthy work experience, sex, good knowledge, lack of training, positive attitude, working in different departments, receiving formal training, higher educational status, in-service training, availability of infection prevention supplies and adherence to infection prevention guidelines were associated with the practice of infection prevention(10, 11, 13, 14).

Although most of these infections can be prevented with relatively inexpensive infection prevention and control, unsafe infection prevention practices were frequent among workers(13), the health care workers attending infection control training courses and hand hygiene were less than 40%(6, 15), and only a few of them were started post-exposure prophylaxis (PEP) of exposure(16). The need to understand infection prevention practices is important for the prevention and control of nosocomial infections and infection transmitted through unsafe practice(9). Therefore, the objective of this study was to assess practice and associated factors on infection control measures in the delivery room among health workers in Shone hospital, Hadiya Zone Ethiopia.

Study population

All health professionals working in Shone Hospital in the Year 2020.

Inclusion criteria

All Healthcare professionals working in delivery units in Shone Hospital during the data collection period.

Exclusion criteria

Health workers who are involuntary and seriously ill were excluded.

Sample size determination

The sample size for the study was determined by using a single proportion formula which was calculated by taking the marginal error of 0.05, with 95% confidence interval and Prevalence of infection prevention practice from the study done in Wolaita Sodo Teaching and Referral Hospital which is 60.5%. so, the sample size was calculated as follows:

$$n = \frac{Z^2 pq}{d^2} = \frac{(1.96)^2 (0.605)(0.395)}{(0.05)^2} = 367$$

By considering 5 % of non-response rate, sample size become 385. Since the total number of health care workers of Shone Badawachoworeda was less than 10,000, we use correction formula and the final sample becomes 217.

Sampling procedure

The sample was proportionally allocated to the selected facilities and study subjects were selected by using simple random sampling.

Independent variables

Socio-demographic variables (Age, sex, marital status, service years, level of education, job title), Previous exposure to infection, Heard about healthcare-associated infection, receiving formal

Operational definition terms

- ✓ Infection prevention- is a measure taken to prevent the distribution of infectious diseases between patients/clients, health care workers and the environment.
- ✓ Practice: Respondents who scored Mean and above mean of questions to assess Infection Prevention practice was considered as 'good practice', while those

Data collection procedures and instruments

Data was collected by using a structured and self-administered questionnaire and observational checklist which was filled in by the investigator using the participant observation method.

Data processing and analysis

Data were checked in the field to ensure that all information was properly collected and recorded. Before and during data processing, the information was checked for completeness. Epi-data manager

Data quality control

The data collectors were oriented on standardized data collection, particularly in the proper filling of the questionnaire. The questionnaire was prepared in English. To improve the quality of the data, it was collected by trained data collectors under the

Ethical clearance was obtained from the institutional review board of Wolaita Sodo, University, department Midwifery. Informed written consent was gained from all study participants. After information was provided about the purpose of the study, non-invasiveness of the data collection procedure, confidentiality of the information and respondents were reassured that they would be anonymous (unnamed). Then respondents were given a chance to ask anything about the study and were free to refuse or stop at any moment during the study.

Dependent variables

Practice of infection prevention

training on infection prevention, availability of antiseptic solution, availability of exposure prophylaxis, and availability of personal protective equipment, Workload

who have scored below the mean of the questions to assess Infection Prevention practice was considered as 'poor practice'(13, 17)

- ✓ Personal Protective Equipment-are materials used as a physical barrier to protect health professionals and patients. These materials include apron, gown, eye googol and facemask and the like.

4.2 was used for data entry and Statistical Package for Social Sciences (SPSS) 25.00 version statistical software was used for data analysis. Descriptive statistics like frequencies, percentages, and cross-tabulations, were used to present variables. Logistic regression models were used to evaluate associations between social networks, and quality of life. Bivariate and multivariate analysis with 95 % CI was employed. Variables found to have a P-value<0.2 in the binary logistic regression were entered into multivariate analysis and strength of association was declared at P value<0.05.

close supervision of the Principal Investigator. Each completed questionnaire was also checked to ascertain that all questions were properly filled in or not.

Ethical consideration(s)

A total of 217 HCWs were interviewed giving a response rate of 100%. From the total respondents, 112(56.2%) were females and most 130(59.9%) were in the age of 18-30. Among respondents, 166(76.5%) had BSc degrees, followed by a master's degree 26(12%) holders. Regarding their professional categories of the study participants, the majority of them were Nurses 80(36.6%). Concerning their year of service/experience of the study, more than half 153(70.5%) have served for less than five years (Table 1).

Result

A. Socio-demographic characteristics

Table 1: Distribution of socio-demographic characteristics of health care workers in Shone Hospital, 2020.

Characteristics	Response	Frequency	Percent
Age	18-30	130	59.9%
	31-40	54	24.9%
	41-50	23	10.6%
	>50	10	4.6%
Sex	Male	105	48.4%
	Female	112	51.6%
Level of education	Diploma	26	11.5%
	Degree	166	76.5%
	Masters	26	12%
Current marital status	Single	115	53%
	Married	90	41.5%
	Divorced	12	5.5%
Job title	Nurse	80	36.8%
	Midwife	47	21.6%
	HO	23	10.6%
	Doctor	15	6.9%
	Anesthetist Nurses	5	2.3%
	Health extension workers	35	16.8%
Service years	<5 years	153	70.5%
	6-10 years	41	18.9%
	Above 10 years	23	10.6%

B. Previous experience of the workers on infection prevention and availability of infrastructures

The majority of respondents 212(97.7%) were heard about infection prevention precautions and 215(99.1) of them were know about universal precautions. Almost half 120(50.3%) of the

respondents were taken infection prevention training. Regarding personal protective equipment, more than half 150(69.1%) reported that as it was available in the facility. Concerning to infection prevention guideline availability, 119(54.8%) of the respondents reported that as it was available in the room (Table 2).

Table 2: Healthcare workers' experience of infection prevention and the availability of infrastructures in Shone Hospital, 2020.

Characteristics	Response	Frequency	Percent(%)
Heard about infection prevention precautions	Yes	212	97.7%
	No	5	2.3%
Heard about healthcare universal precautions'	Yes	215	99.1%
	No	2	0.9%
Have you taken infection prevention training	Yes	120	55.3%
	No	97	44.7%
Time that workers taken training	In this Year	53	24.4%
	In the last three	52	24%

	years		
	>Four years	3	1.3%
Personal protective equipment available	Yes	150	69.1%
	No	67	30.9%
Post-exposure prophylaxis available	Yes	111	51.2%
	No	106	48.8%
Personal protective antiseptic solution available	Yes	114	52.5%
	No	103	47.5%
Does infection prevention guideline available	Yes	119	54.8%
	No	98	45.2%
Infection prevention guideline available	Double surgical glove	77	35.5%
	Double examination glove	22	10.1%
	Utility glove	99	45.6%
	Single clean glove	4	1.8%

C. Practice of Infection Prevention

Participant's practices were assessed for the main elements of Infection Prevention practice like hand hygiene, use of personal protective equipment, instrument processing, and medical wastes disposal. Around half 117(53.9%) of the respondents were applied to all infection prevention techniques on a daily basis.

Regarding time in hours when to change chlorine solution, majority 169(69.1%) reported as it will be

changed every 24hours and around 71.9% of them were reported as they will process contaminated instruments immediately after use (Fig 2). Most HCWs 169(77.9%) discarded sharps in the safety box, but 115(53%) recap needles after use and dispose. More than half 134(61.8%) had no needle stick injury in their work experience, 54(24.9%) had a one-time needle-stick injury in their life. Concerning waste disposal, only 196(90.3%) of the respondents dispose of infectious and non-infectious wastes into two different garbage plastic bins separately (Table 3).

Table 3- Practice of HCWS on instrumental processing and waste disposal techniques at Shone Hospital, Ethiopia 2020.

Characteristics	Response	Frequency	Percent
Duration of soaking used metallic instruments in a chlorine solution	For 20 minutes only	52	24.0%
	For 10 minutes only	147	67.7%
	For 5 minutes only	15	6.9%
	as you want	3	1.4%
Time for processing of contaminated instruments	Immediately after use	156	71.9%
	When you face a shortage of instrument	59	27.2%
	As you want	2	0.9%
A place that you discard used needles and sharps	In the basket	46	21.2%
	With other infectious wastes	2	0.9%
	In a safety box	169	77.9%
Times to dispose of your safety box	When it becomes full up to the edge	53	24.4%
	When it reaches the sketched line of top of safety box	111	51.2%
	If it resists you to receive sharps	45	20.7%
	When sharps are started to dropdown the floor	8	3.7%
Recapping needles after use	Yes	117	53.9%
	No	100	46.1%

Frequency of needle stick/ sharp injury throughout your experience	No needle or sharp injury	134	61.8%
	One time	54	24.9%
	Two time	28	12.9%
	>Two times	1	0.5%
Availability of functional autoclave in room	Yes	192	88.5%
	No	25	11.5%
Method of disinfection used to process instruments.	Sterilization	162	74.7%
	High-level disinfection	37	17.1%
	Both	18	8.3%
Availabilities of different colored containers	Yes	166	76.5%
	No	51	23.5%
how to dispose infectious and non- infectious wastes	Dispose of in two different container	196	90.3%
	Dispose of as you got or as you want	12	5.5%
	Dispose of in combination	9	4.1%

Infection Prevention Practice of Health Care Workers at Shone Hospital delivery rooms

accounts for about 117(53.9%) and 46.1% of the practice poorly(Fig 1).

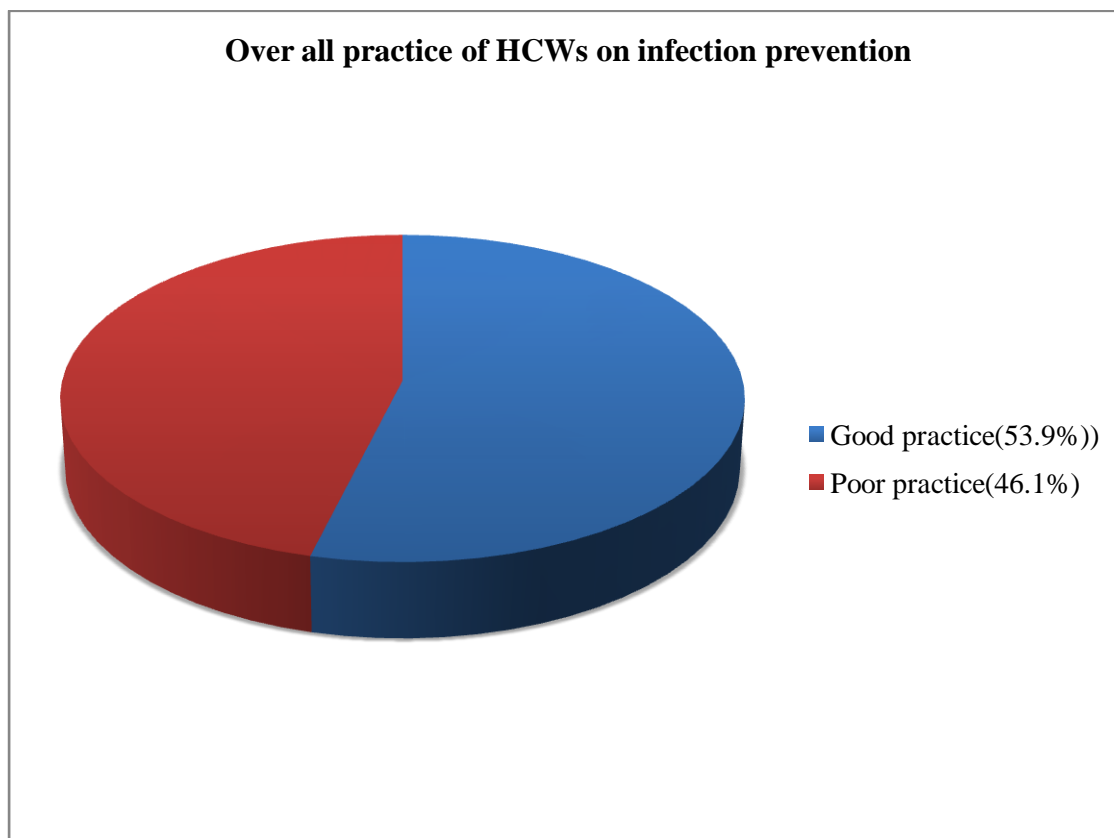


Figure 1: The overall practice of Healthcare workers infection prevention practice at Shone Hospital, Ethiopia 2020.

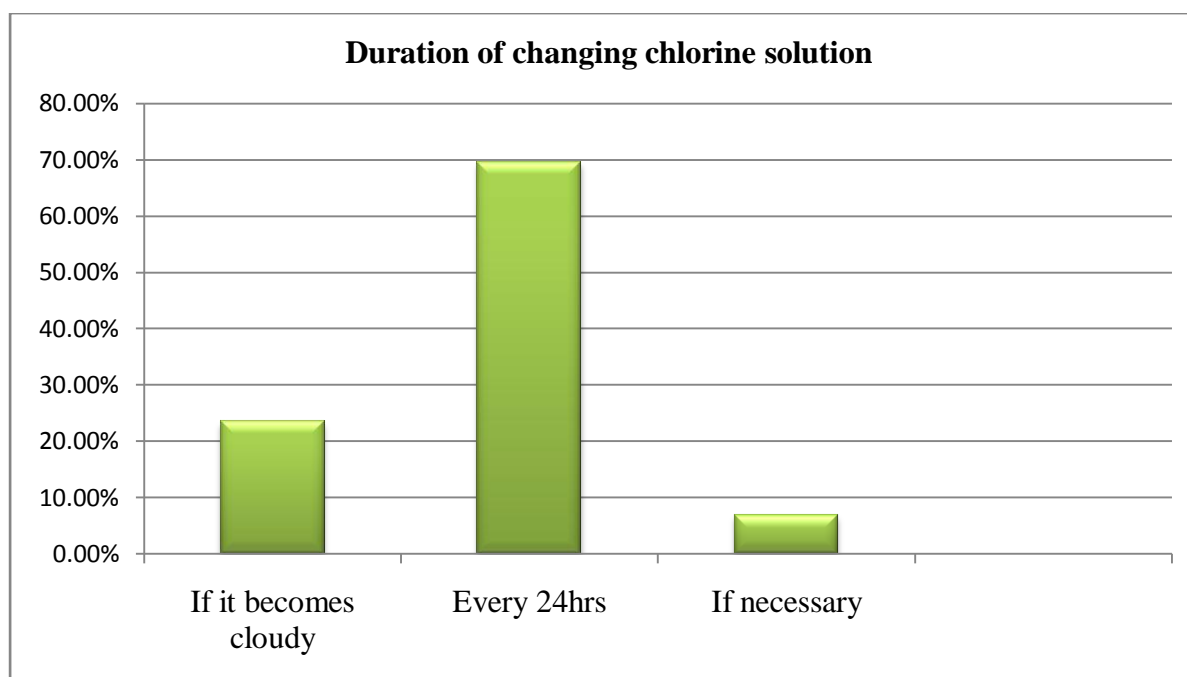


Figure 2: The experience of HealthCare workers on the duration of changing chlorine solution once after usage at Shone Hospital, Ethiopia 2020.

a) Healthcare workers hand hygiene practice

Based on this, the overall practice score was calculated by counting individual response rate and mean was calculated to classify the practice whether safe or unsafe. Based on this, the average safe hand

hygiene practice is 60.4% and 39.6% practice unsafe practice of hand hygiene. On the other hand, the overall practice of PPE use is 88%. Most HCWs 147(67.7%) were reported as they soak metallic instruments in 0.5% chlorine solution for ten minutes (Table 4).

Table 4: Healthcare workers hand hygiene practice at Shone Hospital, Ethiopia 2020.

Characteristics	Response	Frequency	Percent
Between contact with different patients	Yes	130	59.9%
	No	87	41.1%
As soon as one arrives at workplace	Yes	92	42.4%
	No	125	57.6%
After handling of wastes	Yes	176	81.1%
	No	41	18.9%
Before one wears gloves	Yes	105	48.4%
	No	112	51.6%
After one removes gloves	Yes	139	64.1%
	No	78	35.9%
Before leaving ones workplace	Yes	104	47.9%
	No	113	52.1%
After contact with any body fluid	Yes	193	88.9%
	No	24	11.1%

b) Practice of Personal Protective Equipment at the Hospital

More than two-third 191 (88.0%) of the respondents use personal protective equipment in their daily

activities and all of them reported that as they wear a glove when they handle contaminated instruments. Majority 204 (94%) of participants, also use eyewear/face shields in the health facility during attending labor (Table 5).

Table 5: Practice of Healthcare workers (HCWs) on Personal Protective Equipment (PPE) use at Shone Hospital, Ethiopia 2020.

Characteristics	Response	Frequency	Percent
Use of personal protective equipment	Yes	191	88.0%
	No	25	11.5%
Always in the health facility	Yes	64	29.5%
	No	153	70.5%
When one enters the TB Case Admission Ward	Yes	84	38.7%
	No	133	61.3%
When contacting a patient	Yes	34	15.7%
	No	183	84.3%
When one performs a procedure	Yes	56	25.8%
	No	161	74.2%
If one has respiratory diseases	Yes	72	33.2%
	No	145	66.8%
If one is in the operation room	Yes	196	90.3%
	No	21	9.7%
If one is in the labour ward	Yes	214	98.6%
	No	3	1.4%
If you are in Intensive Care Unit	Yes	214	98.6%
	No	3	1.4%
Wear a glove To make contact with contaminated instruments	Yes	217	100%
Wear a glove to give care for a patient	Yes	107	49.3%
	No	110	50.7%
Wear a glove to perform any invasive procedure	Yes	190	87.6%
	No	27	12.4%
Wear a glove to handle wastes	Yes	212	97.7%
	No	5	2.3%
Wear a glove to touch body fluids open wounds and excretions	Yes	217	100%
Wear a glove when contact with sharps	Yes	167	77%
	No	50	23%
Using eye wears/face shields in the health facility(performing invasive procedures)	Yes	170	78.3%
	No	47	21.7%
Using eye wears/face shields in the health facility(when attending a delivery)	Yes	204	94%
	No	13	6%
Using eye wears/face shields in the health facility(when performing any procedure)	Yes	200	92.2%
	No	17	7.8%
Using eye wears/face shields in the health facility(During instrument processing)	Yes	194	89.4%
	No	23	10.6%

Bi-variable and multivariable logistic regression analysis of the practice of infection prevention and its explanatory variables

To assess the association of each independent variable with the Practice of infection prevention, Binary Logistic regression was performed. The factors that showed a p-value of less than 0.2 were added to the multivariate regression model. The result revealed that on the bivariate analysis: Age, sex, educational level, year of service, Taken training of infection prevention, availability of PEP and Know infection prevention guidelines were significantly associated with the Practice of infection prevention. In multivariate logistic regression, age, sex, year of service, Taken training of infection prevention and, know infection prevention guideline were significantly associated

with the Practice of infection prevention at P-value of <0.05. Respondents whose age greater than 50 years were 1.48 times more likely practicing infection prevention than those less than 30 years [AOR=1.48, 95% CI [1.99-2.36]]. From the participants, those who take infection prevention training were 6.68 times more likely practicing infection prevention than others [AOR=6.68, 95% CI [1.57-20.73]]. Similarly, those respondents who know infection prevention guidelines were 1.92 times likely practicing infection prevention than others [AOR=1.92, 95% CI [1.31-2.73]]. However, male health workers were 65% less likely practicing infection prevention than female workers [AOR=0.38, 95% CI [0.55-0.77]] and those who have much workload were 30% less likely practiced IPP than others [AOR=0.70 CI 95% [0.120-0.54] (Table 6).

Table 1: Bi-variable and multivariable logistic regression analysis of the practice of infection prevention and its explanatory variables (n= 217)

Variables	Yes	No	OR (95% CI)	AOR (95%CI)
Age:				
18-30	80	50	1	1
31-40	21	33	0.4[0.82-1.96]	0.17[0.24-1.23]
41-50	8	15	0.16[0.031-0.82] *	0.34[0.66-1.94]
>50	8	2	0.13[0.23-0.78] *	1.48 [1.99-2.36] **
Sex:				
Male	68	37	0.42[0.245-0.73] ***	0.35[0.55-0.77] **
Female	49	63	1	1
Educational level:				
Diploma	21	4	1	1
Degree	79	87	1.03[1.10-3.10] *	2.34[0.61-3.54]
Masters	17	9	2.0[1.01-3.0] *	1.79[0.85-4.51]
Year of service:				
<5 years	80	73	1	1
6-10 Years	25	16	2.25[2.70-2.58] *	0.77[0.12-5.15]
>10 Years	12	11	1.24[1.68-4.28] **	1.87[0.12-6.34] *
Taken IP training:				
Yes	65	55	1.46[1.90-4.34] ***	6.68[1.57-20.73] **
No	52	45	1	1
PPE available:				
Yes	81	69	1.14[1.58-3.01] *	0.5[0.13-2.00]
No	36	31	1	1
Know IP guideline available				
Yes	69	50	2.73[1.78-4.98] ***	1.92[1.31-2.73] **
No	48	50	1	1
Workload exist				
Yes	60	50	2.45[0.30-0.74] **	0.70[0.120-0.54]**
No	57	50	1	1

NB: *=P-value<0.2, **=P-value<0.05, ***=P-value <0.01

Results of Observation Check Lists at Shone Hospital

Delivery ward is the area for observation of the various practices including performance of hand hygiene in their daily activities, instrument processing practice and use of personal protective equipment, waste collection and disposal, discarding of needles without recapping practice, use heavy-duty gloves for processing instrument, availability of safety box in the room, whether safety boxes are not overfilled and availability of hand hygiene materials in the rooms and working area. Based on this, hand hygiene practice of healthcare workers (HCWs) in delivery rooms was observed after body fluid exposure 88.9%, after handling of wastes 81.1%, after touching patient surroundings 59.9% and after glove removal 64.1%.

Regarding Instrument processing practice, it was carried out by HCWs like decontamination and sterilization processes. The buckets were labeled with the date but not recent old labeling but not observed that heavy-duty glove was not used for instrument processing. The concentration of the chlorine solution

Discussion

The study finds out, practice and associated factors towards infection control measures in the delivery room among Health workers in Shone Badawacho, Hadyia Zone Ethiopia, January 2020. In this study, 53.9% of the Healthcare workers were practiced infection control measures safely and the remaining 46.1% of them were poorly practiced. The study was in line with the study done in health institutions of Bahir-Dar city admiration, which showed that 54.2% of the respondents demonstrated a good practice IPP((17)) and in the study done in DebreMarkos referral hospital, Northwest Ethiopia which 57.3% of respondents demonstrated a good IPP(13). This might be due to the similar curriculum delivered for HCWs by the country and the awareness created on infection prevention pre-questions.

This study was lower than the study done in the Palestinian Hospital on HCWs which showed the majority 91.1% of them had good practice(2), the study done in Mulago Hospital, Uganda which showed overall compliance to standard precautions of infection control was low(4), the study done in Iran which showed infection control related standard infrastructures 55.9%(15), in Addis Ababa, Ethiopia(9, 14) 328 which showed that 66.1% - 67.1% of HCWs had safe IPP, and the study done in WolaittaSodo Teaching and Referral Hospital(60.5%)(10). However, this study was higher than the study was done in Trinidad and Tobago on HCWs which showed that 44% had good practices towards IPP((18)) and the study was done in West Arsi District, Southeast Ethiopia which showed only

preparation was correct at the time of observation. Regarding the sterilization method, autoclaves were available in the labor ward and operation room, from the observed autoclave which is tested for correct sterilization.

In addition, based on my observational assessment, some health care workers work their activities without wearing working gowns and the majority of health care workers use gloves for invasive procedures. Among observed health care workers, different PPE like delivery gowns 75.0%, waterproof aprons 90.0%, masks 50.0%, and protective shoes 80.0% in delivery rooms were used when attending deliveries. But most health care providers were not seen using eye Goggles, headcovers in delivery rooms when attending deliveries except in operation rooms. Concerning waste disposal from delivery rooms, there were different kinds of materials to collect sharps and used needle and other wastes. Safety box, plastic pail with cover is available but in the delivery room not using standard safety box. It also uses a well designed incinerator and burning system for waste and placenta kit for the placenta and pathological waste disposal.

36.3% of the respondents were demonstrated good IPP(7). The difference might be due to the sample size difference used, difference in participant's characteristics, the awareness level of the healthcare providers on IP, study setting and study variable difference in each studies, due the presence or absence of training and infection prevention guideline, academic background of the study participants and time difference between the studies.

According to this study findings, respondents whose ages greater than 50 years were 1.48 times more likely practicing IPP than those less than 30 years [AOR=1.48, 95% CI [1.99-2.36]]. From the participants, those who take infection prevention training were 6.68 times more likely practicing infection prevention than others [AOR=6.68, 95% CI [1.57-20.73]]. Similarly, those respondents who know infection prevention guidelines were 1.92 times likely practicing infection prevention than others [AOR=1.92, 95% CI (1.31-2.73)]. The finding was similar with the study done in selected hospital in Bangladesh which showed that taking Infection control training was found statistically significant ($p < 0.02$) in practice(3), in the study done in Palestinian(2), on healthcare workers in DebreMarkos referral hospital, Northwest Ethiopia(13), showed that older age, lengthy work experience, and higher educational status, in healthcare facilities of West Arsi District, Southeast Ethiopia(7) which showed infection prevention practice significantly increased if healthcare workers had received training [AOR= 5.31; 95% CI: 2.42,11.63]] and had infection prevention guidelines available [AOR = 3.34; 95% CI: 1.65, 6.76]], the

study done in health institutions of BahirDar city admiration((17)), showed that working experience greater than 10 years [AOR=3.79(95%CI=2.33, 6.17)] and the study done on HCWs in WolaittaSodo Teaching and Referral Hospital (10) which showed health care workers not received training on IPP were likely to practice IP. The strong positive association could be due to the fact that as the age of professional increases and, their number of years of service increases, healthcare workers are repeatedly exposed to infection prevention principles and became more experienced and knowledgeable. In addition to this, when HCWs know the infection control measures/guidelines and got training on IP, they update their knowledge and demonstrate IP measures better and reduce the risk of being exposed to different microorganisms.

However, in this study findings, male health workers were 65% less likely practicing infection prevention than female workers [AOR=0.35, 95% CI [0.55-0.77]] and those who have much workload were 30% less likely practiced IPP than others [AOR= 0.70, CI95%, [0.120-0.54]]. This finding was in line with the study done on HCWs in WolaittaSodo Teaching and Referral Hospital(3, 10) show that male health care workers were 62% less likely to practice infection prevention when compared with female health care workers [AOR=0.379 [0.193-0.743]]. The discrepancy might be due to the fact HCWs may not recognize/ may not apply all the techniques of IP measures step by step when they have workload and male HCWs sometimes are reluctant and apply the procedures by audacity.

Limitation of the study

Recall bias and the data were collected at a single point in time; the temporal relationship couldn't be established

Conclusion

Findings from this study indicate, the practice of healthcare workers (HCWs) on infection control measures seems low. Participants age [AOR=6.68, 95% CI [1.57-20.73]] and, know infection prevention guideline [AOR=1.92, 95% CI [1.31-2.73]], male health workers [AOR=0.38, 95% CI [0.55-0.770]] and those who have much workload [AOR= 0.70 CI95% [0.120-0.54]] were significantly associated with practice of IP at $P < 0.005$.

Recommendation

Improving institutional supplies like hand hygiene material, PPE, waste disposal materials and developing safe infection prevention programs/guidelines and training of workers with the up-to-date infection prevention guidelines will improve the practice of HCWs practice on IP.

Acronyms and abbreviations

Fig: Figure, HCAIs: Health-Care-Associated Infections, HCWs: Health care workers, IC: Infection control, IP: Infection prevention, PPE: Personal Protective Equipment, PEP: Post-exposure prophylaxis

Declarations:

Ethics approval and consent to participant

Ethical clearance was obtained from WolaittaSodo University. Informed written consent was gained from all study participants. Personal patient information was not recorded, after finishing the data collection the patients' document return to the card room, the information was used for study purposes only.

Consent for publication

Not applicable.

Availability of data and material

The data sets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The author declares no competing interests

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Authors-contributions

AY-was involved in the conception, design, analysis, interpretation, report, manuscript writing, design, analysis, interpretation and report writing. WA was involved in the design, analysis, and interpretation of the data. Both authors read and approved the final manuscript.

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