

# Prevalence of Workplace Violence and Associated Factors Against Nurses Working in Public Health Facilities in Southern Ethiopia

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Haymanot Nigussie

Weldehawaryat <sup>1</sup>

Feleke Gebremeskel

Weldehawariat <sup>2</sup>

Firdawek Getahun Negash <sup>1</sup>

<sup>1</sup> School of Public Health, Unit of Epidemiology, Arba Minch University, Arba Minch, Ethiopia; <sup>2</sup>Arba Minch University, School of Public Health, Unit of Reproductive Health, Arba Minch, Ethiopia

**Background:** Workplace violence is an important challenge faced by healthcare providers, especially nurses, throughout the world. But this issue is neglected in developing countries, including Ethiopia. Therefore, the objective of this study was to assess the prevalence of workplace violence and associated factors against nurses working in public health facilities.

**Methods:** A cross-sectional study was conducted in public health facilities in Gamo Gofa zone from February to March 2018. A simple random sampling technique was used to select 354 study respondents from selected public health facilities. The data was collected using a self-administered, pre-tested, and structured questionnaire and analyzed by using SPSS version 21. Descriptive analysis was made and both bi-variable and multivariable logistic regression were applied to identify the factors associated with workplace violence against nurses.

**Results:** Out of the 348 participants, 150 (43.1%) nurses had experienced workplace violence. Among these, 47 (13.5%) had faced physical violence, 98 (28.2%) had verbal abuse, 36 (10.3%) were bullied/mobbed, and 25 (7.2%) faced sexual harassment at least once in the last 12 months. Patients' relatives were the leading perpetrators in physical, verbal violence, and bullying, accounting 55.3%, 46.9%, and 36.1%, respectively. Female nurses (AOR=1.98; 95% CI=(1.21, 3.25)), those who live without a spouse (AOR=1.98; 95% CI=(1.22, 3.22)), those who drink alcohol (AOR=1.88; 95% CI=(1.03, 3.44)), and those who chew chat (AOR=3.24; 95% CI=(1.25, 8.45)) were more likely to suffer from workplace violence in public health facilities.

**Conclusion:** The prevalence of workplace violence against nurses was high. In addition, the characteristics of the occurrences of different types of violence are different beginning from the perpetrators' characteristics to the measures taken by the nurses. In addition, sex, marital status, drinking alcohol, and chewing chat were found statistically significant factors influencing workplace violence against nurses.

**Keywords:** workplace, violence, public health facilities, Arba Minch, Ethiopia

## Introduction

Workplace Violence (WPV) includes physical assault, homicide, verbal abuse, bullying/mobbing, and sexual harassment that happen at a work site or arising out of the workers' employment.<sup>1-4</sup> Healthcare providers are among the professionals with a higher risk of WPV.<sup>5</sup> The rate of occurrence of violence in the healthcare setting is 4-times more often than violence in any other private-sector.<sup>3</sup> This is because healthcare workers should interact with their patients or clients and their families under difficult circumstances. Patients or clients may act aggressively

Correspondence: Haymanot Nigussie Weldehawaryat  
Arba Minch University, School of Public Health, Unit of Epidemiology, Arba Minch, Ethiopia  
Email jhaymi463@yahoo.com

due to their medical condition or medication they are taking.<sup>6</sup> WPV is a pandemic manifesting itself in different forms and significantly affecting all professional groups, both gender, and all work settings in the health sector.<sup>7</sup>

As nurses are with direct contact with patients they are at higher risk for violence than other staff in the hospital.<sup>3,7</sup> Globally different evidence showed that WPV is an important challenge faced by nurses, where greater than 50% of the nurses faced at least one incident of violence in the last 12 months.<sup>8–13</sup> Some evidence in Ethiopia also showed that the prevalence of WPV ranges from 29.9–82.8%.<sup>14–16</sup>

The consequences of WPV include minor physical injuries, serious physical injuries, temporary and permanent physical disability, psychological trauma, and death.<sup>4,17,18</sup> WPV also affects their job motivation and makes them develop a negative attitude to the profession, leaving the healthcare provision at risk. It also leads to immense financial loss in the health sector.<sup>18–20</sup> Furthermore, the economic burden of workplace violence affects organizations as well as victims, costing billions of dollars in terms of lost wages, medical costs, support costs, lawsuits, etc.<sup>8,21,22</sup> Moreover, workplace violence has a tremendous psychological and physical impact on the victims, their families, and co-workers.<sup>22</sup>

Besides, as a type of violence, sexual violence has a profound impact on the workplace and society at large. Due to the complex potential effects of sexual violence on physical and mental health, the survivors may need time off from work. Furthermore, when sexual violence occurs in the workplace it can create a climate of fear. And it reduces the productivity, work performance, and wellness of the entire staff.<sup>23,24</sup>

Different evidence has shown that different socio-demographic factors and work-related factors affect WPV against nurses.<sup>12–16,18,25,26</sup> According to the violence prevention policy, one way to prevent the violence against employees is to have some risk assessment because the risks differ from setting-to-setting. This implies different facilities should develop a comprehensive violence prevention program based on their setting.<sup>3,27</sup> So, conducting a study to assess the magnitude of the problem and its factors is necessary to take action against workplace violence faced by nurses, who are the front liners in medical care.

Though there are some pieces of evidence showing the prevalence of WPV against nurses, the problem is not well studied in Ethiopia, especially in the southern region. As compared to the impact of the problem, the data available in

the area is not sufficient. So, this study will fill the gap in the literature. Therefore, the main aim of this study was to assess the prevalence and also factors associated with WPV against nurses working in Public Health facilities in southern Ethiopia.

## Materials and Methods

### Study Setting and Design

A cross-sectional study was conducted in selected hospitals and health centers of the Gamo Gofa zone, South Nation Nationalities' Peoples Region (SNNPR), from February to March 2018. Gamo Gofa zone is located southwest from Addis Ababa. The total population of the study area is 2,040,972. Three hospitals (one general and two primary hospitals), 76 health centers, and 471 health posts are owned by the government.

### Population, Sample Size, and Sampling

#### Study Population

Nurses who were working in Gamo Gofa zone public health facilities for at least 12 months were included in the study.

#### Inclusion and Exclusion Criteria

Nurses who were out for training and other purposes during the data collection period and those nurses who were on maternity leave, sick leave, or annual leave were excluded from the study.

#### Sample Size Determination

The sample size was determined by using a single population proportion formula with the assumptions of 95% confidence interval and margin of error 5%, prevalence of workplace violence against nurse working in Hawassa public health facilities was 29.9%, and the total sample size with 10% non-response was 354 nurses.<sup>14</sup>

#### Sampling Technique and Procedure

Simple random sampling was used to select 19 public health facilities among 76 public health facilities found in Gamo Gofa Zone. Then the sample size was proportionally allocated to each of the selected public health facilities. And the study participants were selected by simple random sampling by using computer-generated random numbers from the list of the nurses working in each of the selected public health facilities.

### Data Collection Techniques

The questionnaire developed by the International Labour Office (ILO)/International Council of Nurses (ICN)/World

Health Organization (WHO) and Public Services International (PSI) in 2003 was modified according to the study setting.<sup>6</sup> The questionnaire was translated into the Amharic language and was back-translated to English before the distribution of the questionnaire to the study participants. To assess the validity of the instrument a pretest was done before the commencement of the data collection using 5% of the sample size. This was done on a similar population outside of the study area. Final data was collected using a self-administered, Amharic version structured questionnaire. The questionnaire contains socio-demographic, organizational, and perpetrator related questions. The data was collected by ten data collectors who are health professionals and had previous data collection experience. Intensive training was given to data collectors on the objective, relevance of the study, confidentiality of information, respondent's right, about pre-test, and techniques of the interview. The principal and co-investigators conducted on-site supervision during the data collection period and reviewed all filled questionnaires to identify incomplete and incoherent responses.

## Data Processing and Analysis

Each completed questionnaire was checked manually for completeness before data entry. The data was coded and entered into EPI info version 3.5.3 and the data analysis was done by SPSS version 21. Data cleaning was done to check the accuracy and consistency, and any error identified was corrected accordingly. Descriptive analysis was carried out to describe socio-demographic characteristics, the prevalence of different types of violence, the characteristics of perpetrators, and actions taken against violence. Bi-variable and multivariable logistic regression analyses were performed to identify factors associated with workplace violence. Variables having a *P*-value of less than or equal to 0.25 in the bi-variable analysis were entered into the multivariable logistic regression model.<sup>28,29</sup> Previous findings were also considered to make the variables candidate to the multi-variable model. Adjusted odds ratio with a 95% confidence interval and the *P*-value was used to assess the strength of association and the statistical significance. The model fitness was checked by Hosmer and Lemeshow goodness of fit test. Finally, the results were presented using tables.

## Operational Definitions

### Workplace Violence

A person is regarded as suffering from workplace violence when the study participants experienced at least one type

of violence such as physical violence, verbal abuse, bullying/mobbing, or sexual harassment in circumstances related to their work in the past 12 months.

### Immigration to a Place of Work

If a person who permanently lives in another area immigrates to live closer to the area of work within the last 5 years.

### Drink Alcohol

Those who take alcohol in public areas or exposed to society more than 2 times a week.

### Chewing Chat

Those who chew chat in public areas or exposed to society more than 2 times a week.

## Ethical Considerations

Ethical clearance was obtained from the Institutional Review Board (IRB) of the College of Medicine and Health Sciences, Arba Minch University. A formal letter of cooperation was obtained from each concerned body and submitted to the respective public health facilities. Informed consent was obtained from each study respondent before the data collection started. The purpose of the research was explained to each study respondent. Participants were also informed that they were able to refuse or withdraw from the study at any time if they were not comfortable. The confidentiality of any information provided by study participants was protected. And the research was conducted following the Ethical Principles for Medical Research Involving Human Subjects mentioned in the Declaration of Helsinki.

## Results

### Socio-Demographic Characteristics of Respondents

Three hundred and forty-eight nurses participated and the response rate was 98.3%. The mean age ( $\pm$ SD) of the respondents was 30.7 ( $\pm$ 7.96) years. Out of the total respondents, 197 (56.6%) of them were females and the rest 151 (43.4%) were males. About two-thirds 242, (69.5%) of the respondents were below the age of 30 and most of them 218 (62.6%) were married. The majority (71.3%) were working in hospitals and the rest were working in the health center (Table 1).

**Table 1** Socio-Demographic Characteristics of the Nurses Working in Public Health Facilities in Gamogofa Zone, Southern Ethiopia, 2018 (n=348)

Variables	Category	Workplace Violence		
		Yes, n (%)	No, n (%)	Total, n(%)
Age in years	18–30	103 (68.7)	139 (70.2)	242 (69.5)
	31–40	26 (17.3)	40 (20.2)	66 (19.0)
	>40	21 (14.0)	19 (9.6)	40 (11.5)
Sex of participant	Male	59 (39.3)	92 (46.5)	151 (43.4)
	Female	91 (60.7)	106 (53.5)	197 (56.6)
Marital status	Live without spouse	65 (43.3)	65 (32.8)	130 (37.4)
	Live with spouse	85 (56.7)	133 (67.2)	218 (62.6)
Educational level	Have no Bachelor degree	102 (68.0)	143 (72.2)	245 (70.4)
	Bachelor degree	48 (32.0)	55 (27.8)	103 (29.6)
Immigration to a place of work	Yes	100 (66.7)	111 (56.1)	211 (60.6)
	No	50 (33.3)	87 (43.9)	137 (39.4)
Income in dollars	55–147	84 (6.0)	123 (62.1)	207 (59.5)
	147.1–239	51 (34.0)	67 (33.8)	118 (33.9)
	>239	15 (10.0)	8 (4.0)	23 (6.6)
Alcohol drinking	Yes	48 (32.0)	29 (14.6)	77 (22.1)
	No	102 (68.0)	169 (85.4)	271 (77.9)
Chewing chat	Yes	23 (15.3)	8 (4.0)	31 (8.9)
	No	127 (84.7)	190 (96.0)	317 (91.1)
Place of work	Hospital	105 (70.0)	143 (72.2)	248 (71.3)
	Health center	45 (30.0)	55 (27.8)	100 (28.7)
Work experience	<10 years	111 (74.0)	162 (81.8)	273 (78.4)
	≥10 years	39 (26.0)	36 (18.2)	75 (21.6)
Working ward	Pediatrics	30 (20.0)	39 (19.7)	69 (19.8)
	Gyn/Obs	35 (23.3)	54 (27.3)	89 (25.6)
	Medical	13 (8.7)	22 (11.1)	35 (10.1)
	Surgical	21 (14.0)	23 (11.6)	44 (12.6)
	OPD	31 (20.7)	45 (22.7)	76 (21.8)
	Emergency	17 (11.3)	13 (6.6)	30 (8.6)
	Other	3 (2.0)	2 (1.0)	5 (1.4)
Working at night	Yes	132 (88.0)	179 (90.4)	311 (89.4)
	No	18 (12.0)	19 (9.6)	37 (10.6)
Working in shift	Yes	134 (89.3)	176 (88.9)	310 (89.1)
	No	16 (10.7)	22 (11.1)	38 (10.9)
Sex of patient most frequently work with	Male	33 (22.0)	57 (28.8)	90 (25.9)
	Female	69 (46.0)	97 (49.0)	166 (47.7)
	Both	48 (32.0)	44 (22.2)	92 (26.4)
Sex of immediate supervisor	Male	113 (75.3)	143 (72.2)	256 (73.6)
	Female	37 (24.7)	55 (27.8)	92 (26.4)
Type of employment	Full time	147 (98.0)	196 (99.0)	343 (98.6)
	Part-time	3 (2.0)	2 (1.0)	5 (1.4)

## Prevalence of Workplace Violence

Overall, 43.1% of the respondents reported exposure to workplace violence in the last 12 months. Among the total respondents, 111 (31.9%) had faced one type and 26 (7.5%) had faced two types of violence within the last 12 months.

Of the total respondents, 47 (13.5%) had faced physical violence in the past 12 months. Most (85.5%) of the physical violence happened without using any weapon and, among the physical violence experienced by the nurses, 26 (55.3%) instances were committed by patients' relatives, and most 44 (93.6%) of the perpetrators of physical violence were males (Table 2).

Among the total respondents, 98 (28.2%) reported exposure to verbal abuse in the past 12 months. Most 46 (46.9%) of the perpetrators of verbal abuse were relatives of the patients/clients, followed by staff members 18 (18.4%) (Table 3).

Concerning bullying/mobbing, 36 (10.3%) of the respondents experienced bullying/mobbing in the past 12 months. And 13 (36.1%) of the perpetrators of the bullying/mobbing were relatives of the patients and 26 (72.2%) were males. Besides, 97.2% of the bullying occurred inside the health institution and 24 (66.7%) instances took place during daytime (Table 3).

Of the respondents, 25 (7.2%) had at least one incident of sexual harassment in the past 12 months. Of these, 10 (40%) were committed by other staff members and 76% were committed by male persons. Out of the total sexual harassment committed against the nurses, 20 (80%) happened during daytime and the same amount took place inside the health institution (Table 3).

## Actions Taken Against Workplace Violence Among Nurses

Among those nurses who were victims of physical violence, 20 (42.6%) took action, but 57.4% did not take any measure against the physical violence they faced. Among the nurses who took at least one action for physical violence, 11 (50%) of them prosecuted their perpetrators. More than half (53.1%) of the nurses took action against the verbal abuse that happened against them. The most common measure taken for the verbal abuse was telling a friend or colleague 16 (30%). Among nurses who faced bullying/mobbing and sexual harassment in the previous 12 months, 22 (61.1%) and 16 (64%) took at least one measure, respectively. The commonest measure for the bullying/mobbing and sexual harassment was telling the perpetrator to stop. Besides, 264 (75%) showed an unavailability of reporting procedures in their institution.

**Table 2** Physical Violence Against Nurses Working in Public Health Facilities in Gamogofa Zone, Southern Ethiopia, 2018

Variables	Category	Frequency	Percent (%)
Physical violence	Yes	47	13.5
	No	301	86.5
Incident type	With a weapon	7	14.9
	Without weapon	40	85.5
Consider as typical violence	Yes	29	61.7
	No	18	38.3
Physical perpetrator	Patient/client	12	25.5
	Staff member	2	4.3
	External colleague/worker	2	4.3
	Relatives of patient/client	26	55.3
	Supervisor	4	8.5
Sex of perpetrator	Male	44	93.6
	Female	3	6.4
Perpetrator in anxiety	Yes	9	19.1
	No	30	63.8
	I do not know	8	17.0
Perpetrator mental illness	Yes	1	85.1
	No	40	12.8
	I do not know	6	
Place of physical violence	Inside health institution	41	87.2
	Outside health institution	6	12.8
Time of physical violence	Evening	19	40.4
	Day	28	59.6
Physically injured	No	40	85.1
	Yes	7	14.9
Seek treatment for physical injury (n=7)	No	2	
	Yes	5	71.4
Took an action for physical violence	Yes	22	46.8
	No	25	53.2

## Factors Associated with Workplace Violence Against Nurses

The sex of the respondent, marital status, immigration to a place of work, work experience, drinking alcohol, chewing chat, and sex of patient were included in the multivariable logistic regression analysis. And in the multivariable



**Table 3** Verbal Abuse, Bullying/Mobbing, and Sexual Harassment Against Nurses Working in Public Health Facilities in Southern Ethiopia, 2018

Variables	Category	Verbal Abuse		Bullying/Mobbing		Sexual Harassment	
		Frequency	Percent (%)	Frequency	Percent (%)	Frequency	Percent (%)
Violence in the past 12 months (n=348)	Yes	98	28.2	36	10.3	25	7.2
	No	250	71.8	312	89.7	323	92.8
How often abused	Sometimes	62	63.3	22	61.1	8	32
	Once	36	36.7	14	38.9	17	68
Perpetrator of the violence	Patient/client	12	12.2	4	11.1	1	
	Staff member	18	18.4	7	19.4	10	40.0
	External colleague/worker	4	4.1	2	5.6	0	
	Relatives of patient/client	46	46.9	13	36.1	1	
	Supervisor	15	15.3	5	13.9	8	32.0
	General public	3	3.0	5	13.9	5	20.0
Perpetrator's sex	Male	79	80.6	26	72.2	19	76.0
	Female	19	19.4	10	27.8	6	24.0
Perpetrator in anxiety?	Yes	28	28.6	5	13.9	0	
	No	53	54.1	22	61.1	23	92.0
	I do not know	17	17.3	9	25.0	2	
Was perpetrator mentally ill	Yes	3	3.1	2	5.6	0	
	No	82	83.7	27	75.0	24	96.0
	I do not know	13	13.3	7	19.4	1	
Consider as typical violence	No	29	29.6	13	36.1	3	12.0
	Yes	69	70.4	23	63.9	22	88.0
Place of violence	Inside health institution	92	93.9	35	97.2	20	80
	Outside health institution	6	6.1	1		5	20
Time of verbal abuse	Evening	28	28.6	12	33.3	5	20
	Day time	70	71.4	24	66.7	20	80

analysis, the sex of the respondent, marital status, drinking alcohol, and chewing chat were found to be statistically significant factors. Female nurses were 2-times more likely to have workplace violence (AOR=1.98; 95% CI=1.21, 3.25) than male nurses. Those who live without a spouse were also 2-times more likely to face workplace violence than those who lived with their spouse (AOR=1.98; 95% CI=1.22, 3.22). Those who drink alcohol had higher odds of facing workplace violence than those who did not drink alcohol (AOR=1.88; 95% CI=1.03, 3.44). Besides, those who chew chat were 3-times more likely to face workplace violence than those nurses who do not chew chat (AOR=3.24; 95% CI=1.25, 8.45) (Table 4).

## Discussion

This study revealed 43.1% (95% CI=37.9–48.6) of nurses encounter WPV. This finding is consistent with studies conducted in Saudi Arabia (45.6%) and Rwanda (39%).<sup>18,19</sup> But which is lower as compared to the studies conducted in United States (76%), Northeastern China (83.3%), China (65%), Jordan (55.5%), Palestine (80.4%), Korea (95.5%), Indonesia (54.6%), Gambia (62.1%), and Oromia, Ethiopia (82.8%).<sup>8–13,16,18,30</sup> This might be due to socio-cultural differences and differences in healthcare systems. And it might also be due to under-reporting of the violent events. The magnitude of WPV was higher when compared to the study conducted in Ethiopia, Amhara

**Table 4** Factors Associated with Workplace Violence Against Nurses Working in Public Health Facilities in Gamo Gofa Zone, Southern Ethiopia, 2018

Variables	Category	Workplace Violence		COR (95% CI)	P-value	AOR (95% CI)	P-value
		Yes	No				
Sex of respondent	Male	59	92	1		1	
	Female	91	106	1.34 (0.87, 2.06)	0.184	1.98 (1.21, 3.25)**	0.007
Marital status	Living without spouse	65	65	1.56 (1.01, 2.42)	0.045	1.98 (1.22, 3.22)**	0.006
	Living with a spouse	85	133	1		1	
Immigration to a place of work	Yes	100	111	1.568 (1.01, 2.43)	0.045	1.47 (0.91, 2.37)	0.118
	No	50	87	1		1	
Work experience	<10 years	111	162	0.63 (0.38, 1.06)	0.080	0.67 (0.36, 1.22)	0.191
	≥10 years	39	36	1		1	
Drinking alcohol	Yes	48	29	2.742 (1.62, 4.62)	0.0001	1.88 (1.03, 3.44)**	0.04
	No	102	169	1		1	
Chewing chat	Yes	23	8	4.30 (1.87, 9.92)	0.001	3.24 (1.25, 8.45)**	0.016
	No	127	190	1		1	
Sex of patient most frequently work with	Male	33	57	0.531 (0.29, 0.96)	0.036	0.61 (0.32, 1.18)	0.143
	Female	69	97	0.652 (0.39, 1.089)	0.102	0.76 (0.43, 1.35)	0.350
	Both	48	44	1		1	

Note: \*\*Shows  $P < 0.05$ .

region (26.7%).<sup>15</sup> This might be due to the difference in setting that the research in the Amhara region was conducted only in referral hospitals. This may also be due to the time differences that the people in recent times may enter to different socio-economic instabilities which may be taken as a pushing factor for violence that happened against nurses. The prevalence in this study is also higher compared to the study conducted in Hawassa public health facilities (29.9%).<sup>14</sup> This might be due to the definition deference as the study in Hawassa used the last 6 months before the data collection to define workplace violence but this study used the last 12 months prior to the data collection to define workplace violence. Among different kinds of violence at the workplace, verbal abuse was found to be the commonest one in this study, which is consistent with different studies conducted in different countries.<sup>12,16,18,31,32</sup> This might be because verbal abuse is easy for perpetrators to commit and most of the time this type of violence will not leave the victim with tangible evidence to take action against.

In this study, similar to many of the previous studies the patient relatives' and patients were frequently reported as the main source of violence.<sup>16,18,33,34</sup> This might be because the patients and patient relatives have contact with the nurses in stressful situations.

Furthermore, nurses have close and longer contact with the patients and their relatives.

The sex of the nurses had a significant association with workplace violence; females had higher odds of being exposed to workplace violence than males. This is in line with studies conducted in Jordan, Palestine, and Hawassa. This might be due to the negative community attitude towards female power and ability.<sup>14,18,30</sup>

Marital status was also found to have a statistically significant association with WPV against nurses. This finding was consistent with a study conducted in northwest Ethiopia.<sup>15</sup> This study showed that those nurses who lived without a spouse were 2-times more likely to be exposed to WPV than those who lived with their spouse. This might be because most of the nurses who live without a spouse are young person's less than 30 years old, which can be taken as a predictor for WPV in different studies.<sup>11,14,16,32,34</sup>

Those nurses who drink alcohol and chew chat are also more likely to have WPV than those persons who do not. This might happen because such kinds of substances may lead them to do their task haphazardly so that different persons might try to commit violence on them. Or this might be because in most small cities the personal life of

the nurses is not hidden and culturally persons who drink alcohol and chew chat are given less value by the perpetrators.

The limitation of this study might be recall bias because the retrospective approach needs the nurses to remember the workplace violence in the last 12 months. Furthermore, the study does not include perpetrator factors as the perpetrators cannot be tracked at the time of the study.

## Conclusions

In this study, the prevalence of workplace violence in the last 12 months in the Gamo Gofa zone public health facilities was 43.1%. The findings also revealed that the characteristics of the occurrences of different types of violence are different beginning from the perpetrators' characteristics to the measures taken by the nurses. In addition, sex, marital status, drinking alcohol, and chewing chat were found to be statistically significant factors that influence workplace violence against nurses.

As female nurses are more likely to experience violence it is recommended that policymakers and other stakeholders give special attention to them. Furthermore, there is no reporting procedure for the violent events that happened against the nurses so it is important to arrange an organized system of reporting violence. Furthermore, it is better to help in the way the nurses can take action for violence committed against them.

## Abbreviations

ILO, International Labour Office; ICN, International Council of Nurses; IRB, Institutional Review Board; OPD, Outpatient Departments; PSI, Public Services International; SNNPR, South Nation Nationalities' Peoples Region; SPSS, software package for social science; WHO, World Health Organization.

## Data Sharing Statement

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

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## Author Contributions

All authors made a significant contribution on the conception of the study, in the data collection, data analysis, and interpretation. All authors took part in drafting, revising, or critically reviewing the article, gave final approval of the version to be published, have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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## Disclosure

The authors declare that they have no competing interests for this work.

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