

The magnitude and determinants of violence against healthcare workers in Pakistan

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ABSTRACT

Objectives To determine the magnitude and determinants of violence against healthcare workers (HCWs) and to identify the predominant types and causes of violence experienced by them.

Methodology A cross-sectional survey based on structured questionnaire adopted from previous surveys and qualitative data was conducted in 4 large cities and 12 districts in 3 provinces of Pakistan. The survey covered 8579 from all cadres of HCWs, including doctors, nurses, technicians, support staff, ambulance workers, vaccinators, lady health visitors, midwives and lady health workers (LHWs). The predictors of overall violence experienced, physical violence experienced and verbal violence experienced were separately analysed for tertiary care hospitals, secondary care hospitals, primary care hospitals and field-level HCWs. Logistic regression was used to compute adjusted ORs with 95% CIs for the association of different factors with the violence experienced.

Results More than one-third (38.4%) reported having experienced any form of violence in the last 6 months. Verbal violence was the most commonly experienced form (33.9%), followed by physical violence (6.6%). The main reasons for physical violence were death of patients (17.6%), serious condition of patients (16.6%) and delay in care (13.4%). Among the different types of field HCWs, emergency vehicle operators were significantly more likely to experience verbal violence compared with LHWs (adjusted OR=1.97; 95% CI 1.31 to 2.94; p=0.001). Among hospital HCWs, those working in private hospitals were significantly less likely to experience physical violence (adjusted OR=0.52; 95% CI 0.38 to 0.71; p=0.001) and verbal violence (adjusted OR=0.57; 95% CI 0.48 to 0.68; p=0.001).

Conclusion Violence against HCWs exists in various forms among all cadres and at different levels of care. The gaps in capacity, resources and policies are evident. Specific strategies need to be adopted for different types of HCWs to protect them against violence.

*The study was conducted under the framework of ICRC's Healthcare in Danger Initiative for protection of healthcare against Violence

INTRODUCTION

Violence as defined by WHO is 'the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, which either results in or has a high likelihood of resulting in injury, death, psychological harm, mal-development or deprivation'.¹

Key questions

What is already known?

- ▶ Previous studies on violence have mostly been on small scale involving one or few cadres of HCW's.

What are the new findings?

- ▶ Main reasons among hospital HCW's included reaction of attendants to adverse outcomes, impatient behavior of patients and attendants, delay in care and lack of facilities
- ▶ Among ambulance workers, main reasons included delay in arrival and shifting of the patient and lack of facilities to provide good quality pre-hospital emergency care
- ▶ Among field healthcare workers, misconception of vaccines was the main reason.
- ▶ This study proposes interventions according to main reasons of violence.

What do the findings imply?

- ▶ The findings of the study provide directions for different healthcare settings on how to protect HCW's.
- ▶ The essential interventions required are increasing resources to provide good quality of care, introducing policies to improve responsiveness to patient's needs, training HCW's in communication and de-escalation skills and introducing educational and regulatory measures to improve patient and attendant behavior

Workplace violence has been defined as 'any incident where staff are abused, threatened or assaulted in circumstances relating to their work involving an explicit or implicit challenge to their safety, well-being and health'.² Almost a quarter of workplace violence occurs within the healthcare sector.³ Violence against healthcare workers (HCWs) is a global phenomenon and was declared a major public health problem in the Forty-Ninth World Health Assembly in 1996.⁴ Many countries have reported high incidence of

physical and verbal violence especially in the emergency departments.^{5–10} HCWs are mostly susceptible to reactive violence from patients and their attendants, affecting their mental and physical well-being.¹¹ If the workers are stressed about security, it can lead to post-traumatic stress disorder and can decrease job performance and increase burn-out. This also negatively impacts patients who are deprived of good-quality care responsive to their genuine needs in time of trouble.¹² Research studies and press reports in Pakistan have highlighted the issue of violence against healthcare providers, in which they have been subjected to all forms of violence ranging from verbal and physical misbehaviour to even threats of extortion and kidnapping for ransom.^{13–15} To add to that, many doctors have been killed either for ransom or have been targeted on religious, ethnic and sectarian grounds.^{16 17} As a result of lack of secure environments, outmigration of healthcare providers from the country has also become common and the performance of health sector has been deeply affected.¹⁸

The International Committee of the Red Cross within the framework of its global initiative, Health Care in Danger (HCiD), seeks to improve the protection of patients, medical personnel, facilities and vehicles from violence through humanitarian diplomacy, advocacy, promotion of law and practical interventions. A large-scale, multicentre research in Karachi in 2015 found out that around one-third of all healthcare providers experienced any kind of violence in the past 12 months.^{19 20} Keeping in view the endemic nature of the problem and HCiD initiative's commitment to protect HCWs all over Pakistan, there was a need to highlight the issue at a larger scale and to understand in detail the dimensions of the issue at different levels of care. Therefore, this survey was conducted in three provinces of Pakistan to identify solutions that are applicable on a wider scale. The main objectives of this survey were to determine the magnitude and determinants of violence against HCWs and to identify the predominant types and causes of violence experienced by them.

METHODS

Study design, population and setting

A cross-sectional survey based on a structured questionnaire was conducted in four large cities of Pakistan, namely Islamabad, Peshawar, Lahore and Karachi, and four randomly sampled districts each in three provinces of Pakistan (Sindh, Punjab and Khyber Pakhtunkhwa). The project was led by HCiD partner in Karachi, that is, APPNA Institute of Public Health, Jinnah Sindh Medical University, in collaboration with Al-Nafees Medical College (Isra University) Islamabad, University of Lahore (Punjab), Khyber Medical University (Khyber Pakhtunkhwa) and Faisalabad Medical University.

The survey covered all cadres of HCWs, including doctors, nurses, technicians, support staff (clerical, security and housekeeping staff), ambulance staff,

vaccinators, lady health visitors, midwives and lady health workers (LHWs). The study started in January 2018 and was completed by the end of the year.

Sample size and sampling

Sample size was estimated with the assumption that an expected 33.5% of HCWs would be experiencing violence taken from a previous study in Karachi,²⁰ with $\pm 1\%$ accuracy and 95% confidence level; the sample size came out to be 8486 HCWs. Due to budget constraints, data could be collected in any five cities in each of the three provinces (capital cities and districts) and the federal capital. Since the population of provincial capitals and federal capital is more than double the average population in any district, 1000 HCWs were selected from each of the four large cities (three provincial capitals and one federal capital) and 400 HCWs were selected from four randomly selected districts in each province, collectively amounting to a sample size of 8800 HCWs. The districts were chosen from four different divisional regions of each province to ensure adjustment for socioeconomic variability and accessibility to healthcare facilities. One district was randomly chosen from each of the provincial regions.

Distribution of sample size between different cadres was based on covering at least 10% of the HCWs from the expected number of HCWs in each of the settings. For example if there were 50 sanctioned positions of a doctor in a secondary care facility, we covered at least five doctors from that facility. In the four large cities, hospital staff including doctors, nurses, technicians and support staff were sampled from three public and three private sector hospitals. Within each hospital, equal numbers of HCWs were taken from emergency, medical, surgical, paediatric, and gynaecology and obstetrics departments. Ambulance staff were stratified into technical staff and vehicle operators. Equal numbers of vaccinators were randomly chosen from 10 different coverage areas of the city. Equal numbers of LHWs were randomly chosen from 10 different coverage areas of the city.

In the 12 districts, hospital staff including doctors, nurses, technicians and support staff were equally sampled from public and private settings. All three tiers of public sector at the district level, including district headquarter hospital, tehsil health units and basic health units, were involved. Similarly, private settings of both district and tehsil levels were included. Ambulance staff were equally distributed among major service providers (both public and private sector) and were also stratified equally into technical staff and vehicle operators. Equal numbers of vaccinators and LHWs were randomly chosen from 10 different coverage areas of the district.

Patient and public involvement

A baseline qualitative study was conducted with the target study population to construct the structured questionnaire. However, the HCWs were not directly involved in the design and conduct of the study due to

the cross-sectional nature of the study. As per plan, the study findings will be shared with the administrators of the different sites where the study was conducted.

Data collection methods

Data collection was allocated on a daily basis with data collectors given a set of sites already planned by the data supervisors. The survey team gathered in the field office every morning, prepared the strategy for the day and left for the field. After completing fieldwork the team came back to the office, checked their work for completeness and errors, and submitted it to data supervisors. If any errors and inconsistencies were identified, the forms were given back to the data collectors for correction in the field. Scheduled and surprise monitoring visits were made by regional complementers at all sites. As the data were collected by trained data collectors and all respondents complied after discussion on their apprehensions, we had 100% response rate.

The questionnaire was adopted from previous surveys done in Karachi and Peshawar and was modified based on the findings of a baseline qualitative study. As the original studies were done in major cities and missed the rural and suburban context, qualitative study was done for contextualisation. Two indepth interviews (IDIs) and two focus group discussions (FGDs) were conducted with HCWs and administrators in each of the three provinces. The IDIs were conducted with the administrators, while the FGDs involved hospital HCWs, including doctors, nurses and technicians, as well as field HCWs including LHWs and vaccinators. Thematic content analysis provided insights on the description of violence and its reasons, which helped in finalising the questionnaire. Section 1 of the questionnaire obtained information on demographic and occupational characteristics of the participant, including age, gender, workplace and years of experience. Section 2 gathered information on any form of violence experienced or witnessed in the last 6 months, for example, number of events, nature of the event, reason and perpetrators.

Statistical analysis

Data were collected from 8756 individuals, of whom 177 had missing information. Therefore the final analysis was done on 8579 HCWs. Demographics and job characteristics were summarised as frequency and percentages for categorical variables and means and SD for continuous variables. Frequencies and percentages of overall violence and their types experienced and witnessed were also computed.

The predictors of overall violence experienced, physical violence experienced and verbal violence experienced were separately analysed for tertiary care hospital, secondary care hospitals, primary care hospitals and field HCWs. Logistic regression was used to compute adjusted ORs with 95% CIs to determine the association of different factors with the three outcomes mentioned above. The independent variables included age, work experience,

Table 1 Descriptive characteristics of healthcare workers (n=8579)

Age, mean 33.19, SD 8.86	
18–29	42.2% (3618)
30–44	44.8% (3842)
45 and above	13.0% (1119)
Gender	
Male	55.6% (4770)
Female	44.4% (3809)
Religion	
Islam	94.6% (8114)
Christianity	4.1% (350)
Hinduism	1.3% (109)
Others	0.1% (6)
Province	
Sindh	30.8% (2641)
Punjab	29.9% (2563)
Khyber Pakhtunkhwa	28.2% (2419)
Federal Capital	11.1% (956)
Major language	
Urdu	21.7% (1860)
Sindhi	17.1% (1470)
Punjabi	29.2% (2509)
Pushtu	23.7% (2035)
Baluchi	0.6% (51)
Hindko	4.4% (375)
Siraiki	2.5% (214)
Others	0.8% (65)

gender, province, city, type of hospital (public or private), hospital departments, cadre of HCWs and security index (categorised as low, medium and high). Principal component analysis was used to compute hospital security index based on data gathered on 27 items related to hospital security and field security index based on 12 items related to field security.

RESULTS

Table 1 shows the descriptive characteristics of the HCWs. The mean age of the participants was 33.19±8.86 years. Men (55.6%) outnumbered women (44.4%). Majority of the respondents were Muslims (94.6%), with a fairly equal representation from the three provinces.

Table 2 shows the common forms of violence experienced. Almost half (49.2%) of the participants had either experienced or witnessed any kind of violence and more than one-third (38.4%) reported having experienced any form of violence in the last 6 months. On average each HCW experienced 4.15 events and witnessed 1.58 events of violence in the last 6 months. Verbal violence was the most commonly experienced form (33.9%), followed

Table 2 Predominant nature of violence experienced or witnessed in the last 6 months (n=8579)

	Experienced	Witnessed
Verbal violence (abused/shouted at/threatened)	33.9% (2909) Mean=3.93, SD=8.83	18.4% (1578) Mean=1.43, SD=4.90
Physical violence (beaten/pushed/thrown things at)	6.6% (567) Mean=0.12, SD=0.59	5.2% (446) Mean=0.12, SD=0.71
Falsely accused	2.2% (189) Mean=0.06, SD=0.55	0.7% (63) Mean=0.01, SD=0.19
Bullied/harassed	1.1% (91) Mean=0.023, SD=0.281	0.4% (35) Mean=0.01, SD=0.095
Shown or attacked with weapon	0.7% (57) Mean=0.006, SD=0.081	0.3% (29) Mean=0.00, SD=0.085
Damage to facility	0.4% (36) Mean=0.01, SD=0.11	0.3% (25) Mean=0.00, SD=0.073
Robbed	0.3% (27) Mean=0.004, SD=0.084	0.3% (22) Mean=0.00, SD=0.073
Extorted	0.1% (7) Mean=0.00, SD=0.070	0.1% (7) Mean=0.00, SD=0.029
Kidnapping	Not available	0.1% (5) Mean=0.00, SD=0.024

by physical violence (6.6%). Other less common forms of violence experienced included being falsely accused (2.2%), bullied or harassed (1.1%), being shown or attacked with weapon (0.7%), damage to facility (0.4%), being robbed (0.3%), and being extorted (0.1%).

Table 3 shows the predictors of violence against field HCWs who experienced violence. Work experience of 10 years and above was significantly related to experiencing less physical violence (adjusted OR=0.34; 95% CI 0.18 to 0.65; p=0.001) and verbal violence (adjusted OR=0.63; 95% CI 0.46 to 0.88; p=0.008). Female field HCWs were significantly more likely to experience verbal violence (adjusted OR=1.56; 95% CI 1.16 to 2.10; p=0.003). Among the different types of field HCWs, emergency vehicle operators were significantly more likely to experience verbal violence with reference to LHWs (adjusted OR=1.97; 95% CI 1.31 to 2.94; p=0.001).

Table 4 shows the predictors of violence against tertiary care hospital HCWs in big cities who experienced violence. HCWs in private hospitals were significantly less likely to experience physical violence (adjusted OR=0.52; 95% CI 0.38 to 0.71; p=0.001) and verbal violence (adjusted OR=0.57; 95% CI 0.48 to 0.68; p=0.001). With reference to HCWs in diagnostics, HCWs in emergency departments were significantly more likely

to experience physical violence (adjusted OR=5.84; 95% CI 2.17 to 15.72; p<0.001). Among the different types of HCWs, in comparison with administration staff, security guards were significantly more likely to experience verbal violence (adjusted OR=1.77; 95% CI 1.07 to 2.92; p=0.024).

Table 5 shows the predictors of violence against secondary care hospital HCWs in districts and tehsils who experienced violence. In comparison with private facilities, HCWs in government facilities were significantly more likely to experience verbal violence (p<0.001). Among the different types of HCWs, in comparison with support staff, doctors were significantly less likely to experience physical violence (adjusted OR=0.56; 95% CI 0.32 to 0.97; p=0.039) and more likely to experience verbal violence (adjusted OR=1.89; 95% CI 1.32 to 2.71; p=0.001).

Table 6 shows the predictors of violence against HCWs in basic health units and private clinics who experienced violence. In comparison with private clinics, HCWs in basic health units were significantly more likely to experience verbal violence (adjusted OR=2.22; 95% CI 1.39 to 3.55; p=0.001).

Figures 1 and 2 show the main reasons for physical and verbal violence, respectively. Among reasons for physical violence related to patient condition and outcome, death of the patient (17.6%) and reaction to serious condition of the patient (16.6%) were the two most important reasons. Among reasons related to quality of services, delay in care (13.4%) was the most important reason, followed by complaints of poor care (2.3%). Among reasons related to resources, lack of medicines or equipment was reported highly (6.2%), followed by high workload due to high number of patients (3.7%) and overcrowding due to high number of attendants (3.4%). Among reasons related to patients' behaviour, reaction of attendants when stopped to limit access especially by security guards (7.2%) was the most important, followed by misconception about vaccines reported highly by vaccinators and LHWs (6%), impatience to wait for turn (5.3%) and referral of the patient (3.7%). Among psychosocial reasons, inability to pay was the main reason (1.9%). Attendants were the chief perpetrators of the physical violence (90.5%).

Among reasons for verbal violence related to quality of services, delay in care (16.5%) was the most important reason, followed by complaints of poor care (5.4%) and mistake in care (1.5%). Among reasons related to patient condition and outcome, death of the patient (3.1%) and reaction to serious condition of the patient (4%) were the two most important reasons. Among reasons related to resources, lack of medicines or equipment was reported highly (10%), followed by high workload due to high number of patients (7.2%) and overcrowding due to high number of attendants (7.6%). Among reasons related to patients' behaviour, misconception about vaccines reported highly by vaccinators and LHWs (8.4%) was the main reason, followed by impatience to wait for

Table 3 Predictors of violence against field healthcare workers who experienced violence (n=2303)

	Any form of violence		Physical violence		Verbal violence	
	Adjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Age						
18–29 (n=875)	1		1		1	
30–44 (n=1196)	0.91 (0.70 to 1.17)	0.467	1.55 (0.95 to 2.53)	0.079	0.77 (0.59 to 1.01)	0.051
45 and above (320)	0.86 (0.58 to 1.26)	0.451	2.04 (0.92 to 4.53)	0.079	0.71 (0.47 to 1.08)	0.111
Work experience						
1–4 years (n=966)	1		1		1	
5–9 years (n=579)	0.82 (0.63 to 1.07)	0.162	0.60 (0.35 to 1.01)	0.055	0.80 (0.61 to 1.05)	0.117
10 years and above (n=846)	0.67 (0.47 to 0.89)	0.008	0.34 (0.18 to 0.65)	0.001	0.63 (0.46 to 0.88)	0.008
Gender						
Male (n=1260)	1		1		1	
Female (n=1131)	1.57 (1.18 to 2.09)	0.002	1.01 (0.53 to 1.95)	0.955	1.56 (1.16 to 2.10)	0.003
Province						
Punjab (n=748)	1		1		1	
Sindh (n=760)	2.31 (1.82 to 2.93)	<0.001	3.00 (1.68 to 5.35)	<0.001	2.25 (1.75 to 2.90)	<0.001
Khyber Pakhtunkhwa (n=706)	2.38 (1.87 to 3.03)	<0.001	2.44 (1.35 to 4.40)	0.003	2.15 (1.67 to 2.76)	<0.001
Islamabad (n=177)	0.52 (0.32 to 0.82)	0.006	0.83 (0.27 to 2.56)	0.759	0.36 (0.21 to 0.64)	<0.001
Job title						
LHW (n=710)	1		1		1	
EVO (n=420)	2.1 (1.42 to 3.09)	<0.001	0.90 (0.38 to 2.09)	0.807	1.97 (1.31 to 2.94)	0.001
Vaccinator (n=924)	1.25 (0.94 to 1.66)	0.125	0.58 (0.31 to 1.10)	0.097	1.20 (0.90 to 1.62)	0.204
EMT (n=249)	1.25 (0.81 to 1.94)	0.305	1.05 (0.42 to 2.57)	0.912	1.09 (0.68 to 1.72)	0.711
Security index						
Low (n=795)	1		1		1	
Moderate (801)	0.94 (0.75 to 1.18)	0.619	0.75 (0.47 to 1.19)	0.225	1.00 (0.79 to 1.26)	0.979
High (795)	0.96 (0.76 to 1.20)	0.749	0.76 (0.48 to 1.21)	0.255	1.11 (0.88 to 1.41)	0.352

EMT, emergency medical technician; EVO, emergency vehicle operator; LHW, lady health worker.

turn (5.4%), demand of care of personal choice (4.8%), demand of protocol (4.5%) and referral of the patient (2.4%). Among psychosocial reasons, inability to pay was the main reason (2.2%). Among professional reasons, dissatisfaction of senior with job performance (1.5%) and being late or absent from duty (1.5%) were the two main reasons for verbal violence. Attendants (79%) followed by patients (13.4%) were the chief perpetrators of the verbal violence.

More than two-thirds (70.5%) reported the event if they experienced any violence (n=3300). Among those who reported the incident (n=2328), the majority reported to their senior (38.6%), security in charge (34.8%) or management of their organisation (23.2%). As a result of reporting, almost half were investigated (43.4%), while there was no response in the case of one-third of events reported (34.1%). Among those who did not report, the majority considered it useless (73.6%), while some of them were afraid of the negative consequences (14.5%).

DISCUSSION

This is one of the very few studies on violence against HCWs which has been conducted on such a large scale involving data gathering from multiple cadres of HCWs from 16 districts in 3 provinces of a country.

On average each HCW experienced 4.15 events of violence, with more than one-third reporting having experienced any form of violence in the last 6 months. Verbal violence was the most commonly experienced form (33.9%), followed by physical violence (6.6%). Since these are combined estimates of all cadres of HCWs, our comparisons will be based on different cadres of HCWs that other studies have focused on. These findings are strikingly similar to the study done in Karachi on similar cadres of HCWs, where 30.5% reported verbal while 14.6% revealed having experienced physical violence.²⁰ The lower frequency of physical violence reported in this study could be due to a shorter recall period of 6 months as compared with the 1-year recall used by most studies.

Table 4 Predictors of violence against healthcare workers in tertiary care hospitals who experienced violence (n=2815)

	Any form of violence		Physical violence		Verbal violence	
	Adjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Age						
18–29 (n=1511)	1		1		1	
30–44 (n=1054)	1.05 (0.86 to 1.28)	0.61	1.28 (0.92 to 1.80)	0.136	1.00 (0.82 to 1.22)	0.61
45 and above (250)	1.33 (0.93 to 1.89)	0.114	1.20 (0.67 to 2.14)	0.52	1.33 (0.93 to 1.90)	0.111
Work experience						
1–4 years (n=1730)	1		1		1	
5–9 years (n=503)	1.04 (0.83 to 1.31)	0.692	1.18 (0.80 to 1.73)	0.4	1.01 (0.80 to 1.27)	0.904
10 years and above (n=582)	0.91 (0.70 to 1.18)	0.496	1.10 (0.72 to 1.68)	0.655	0.84 (0.65 to 1.10)	0.22
Gender						
Male (n=1582)	1		1		1	
Female (n=1233)	0.99 (0.82 to 1.18)	0.918	0.77 (0.55 to 1.07)	0.126	1.01 (0.84 to 1.22)	0.851
City						
Lahore (n=722)	1		1		1	
Karachi (n=737)	3.25 (2.52 to 4.18)	<0.001	2.61 (1.63 to 4.18)	<0.001	3.38 (2.61 to 4.37)	<0.001
Peshawar (n=627)	2.16 (1.64 to 2.83)	<0.001	2.00 (1.20 to 3.36)	0.008	2.07 (1.57 to 2.74)	<0.001
Islamabad (n=729)	2.47 (1.95 to 3.13)	<0.001	1.57 (0.98 to 2.51)	0.057	2.53 (1.99 to 3.22)	<0.001
Type of hospital						
Public (n=1414)	1				1	
Private (n=1401)	0.55 (0.46 to 0.65)	<0.001	0.52 (0.38 to 0.71)	<0.001	0.57 (0.48 to 0.68)	<0.001
Department						
Diagnostics (n=252)	1				1	
Medicine and allied (n=619)	1.25 (0.84 to 1.85)	0.255	3.00 (1.10 to 8.18)	0.032	1.03 (0.70 to 1.54)	0.849
Surgery and allied (n=634)	1.00 (0.69 to 1.47)	0.966	3.29 (1.23 to 8.81)	0.018	0.91 (0.62 to 1.33)	0.631
Paediatrics (n=427)	1.30 (0.86 to 1.95)	0.205	3.26 (1.17 to 9.09)	0.023	1.07 (0.71 to 1.62)	0.735
Gynaecology and obstetrics (n=406)	1.15 (0.76 to 1.73)	0.5	3.02 (1.07 to 8.54)	0.036	1.00 (0.66 to 1.52)	0.974
Emergency (n=477)	1.81 (1.22 to 2.69)	0.003	5.84 (2.17 to 15.72)	<0.001	1.39 (0.93 to 2.08)	0.103
Job title						
Administration (n=137)	1		1		1	
Intern/resident (n=475)	0.94 (0.61 to 1.44)	0.777	0.72 (0.35 to 1.45)	0.364	1.06 (0.68 to 1.65)	0.787
Medical officer (n=569)	0.78 (0.52 to 1.18)	0.25	0.54 (0.28 to 1.04)	0.066	0.86 (0.56 to 1.31)	0.496
Consultant (n=131)	1.00 (0.58 to 1.70)	1	0.80 (0.34 to 1.89)	0.618	1.27 (0.74 to 2.19)	0.374
Nurse (n=602)	1.03 (0.68 to 1.55)	0.873	0.54 (0.27 to 1.05)	0.071	1.21 (0.79 to 1.84)	0.374
Technician (n=566)	1.05 (0.69 to 1.61)	0.802	0.68 (0.35 to 1.33)	0.263	1.12 (0.72 to 1.73)	0.6
Housekeeping staff (n=180)	1.09 (0.67 to 1.76)	0.711	0.80 (0.38 to 1.69)	0.571	1.04 (0.64 to 1.70)	0.859
Security guard (n=155)	1.96 (1.19 to 3.21)	0.008	1.84 (0.93 to 3.64)	0.078	1.77 (1.07 to 2.92)	0.024
Security index						
Low (n=242)	1		1		1	
Moderate (n=736)	1.24 (0.90 to 1.70)	0.174	1.04 (0.63 to 1.74)	0.856	1.19 (0.86 to 1.64)	0.277
High (n=1837)	1.26 (0.91 to 1.74)	0.155	1.09 (0.65 to 1.84)	0.731	1.28 (0.92 to 1.77)	0.131

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Table 5 Predictors of violence against healthcare workers in secondary care hospitals who experienced violence (n=1928)

	Any form of violence		Physical violence		Verbal violence	
	Adjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Age						
18–29 (n=726)	1		1		1	
30–44 (n=897)	0.96 (0.74 to 1.24)	0.781	1.26 (0.77 to 2.05)	0.35	1.08 (0.83 to 1.41)	0.541
45 and above (305)	1.15 (0.77 to 1.71)	0.492	1.01 (0.48 to 2.11)	0.97	1.26 (0.84 to 1.90)	0.255
Work experience						
1–4 years (n=792)	1		1		1	
5–9 years (n=536)	1.31 (1.01 to 1.70)	0.039	1.50 (0.92 to 2.45)	0.099	1.21 (0.93 to 1.57)	0.152
10 years and above (n=600)	1.00 (0.72 to 1.39)	0.973	1.12 (0.62 to 2.04)	0.699	0.78 (0.56 to 1.09)	0.151
Gender						
Male (n=1341)	1		1		1	
Female (n=587)	0.96 (0.73 to 1.26)	0.801	0.77 (0.47 to 1.26)	0.306	0.99 (0.75 to 1.31)	0.992
City						
Punjab (n=689)	1		1		1	
Sindh (n=579)	0.53 (0.41 to 0.68)	<0.001	2.47 (1.60 to 3.83)	<0.001	0.59 (0.46 to 0.76)	<0.001
Khyber Pakhtunkhwa (n=660)	0.68 (0.53 to 0.89)	0.005	0.63 (0.36 to 1.10)	0.107	0.78 (0.60 to 1.02)	0.07
Type of hospital						
Private hospital (n=950)	1		1		1	
District headquarter hospital (n=448)	1.93 (1.52 to 2.45)	<0.001	1.52 (0.97 to 2.38)	0.062	2.08 (1.63 to 2.64)	<0.001
Tehsil headquarter hospital (n=530)	1.58 (1.26 to 2.00)	<0.001	1.99 (1.30 to 3.05)	0.001	1.65 (1.31 to 2.09)	<0.001
Department						
Diagnostics (n=221)	1				1	
Emergency (n=270)	2.28 (1.49 to 3.50)	<0.001	2.77 (1.16 to 6.61)	0.022	2.01 (1.30 to 3.09)	0.001
Medicine and allied (n=537)	1.09 (0.74 to 1.61)	0.631	1.23 (0.51 to 2.95)	0.634	0.96 (0.64 to 1.42)	0.843
Surgery and allied (n=401)	0.83 (0.56 to 1.23)	0.374	1.30 (0.55 to 3.10)	0.543	0.75 (0.50 to 1.12)	0.169
Paediatrics (n=247)	1.76 (1.14 to 2.72)	0.011	1.66 (0.66 to 4.17)	0.281	1.52 (0.98 to 2.37)	0.059
Gynaecology and obstetrics (n=252)	1.57 (1.00 to 2.49)	0.05	1.14 (0.43 to 3.02)	0.791	1.30 (0.82 to 2.06)	0.264
Job title						
Support staff (n=178)	1		1		1	
Doctor (741)	1.35 (0.96 to 1.91)	0.083	0.56 (0.32 to 0.97)	0.039	1.89 (1.32 to 2.71)	0.001
Nurse (n=501)	1.24 (0.84 to 1.84)	0.268	0.57 (0.30 to 1.09)	0.09	1.53 (1.02 to 2.30)	0.04
Technician (n=508)	0.97 (0.66 to 1.43)	0.898	0.43 (0.22 to 0.81)	0.009	1.31 (0.88 to 1.96)	0.18
Security index						
Low (n=841)	1		1		1	
Moderate (n=919)	1.07 (0.86 to 1.33)	0.515	0.84 (0.56 to 1.25)	0.41	1.19 (0.95 to 1.48)	0.119
High (n=168)	1.52 (1.04 to 2.22)	0.03	1.20 (0.62 to 2.32)	0.587	1.73 (1.18 to 2.54)	0.005

Recall period of 6 months in this study was used to quantify the average number of events.

Among hospital-based workers, 35.4% experienced verbal while 7.1% experienced physical violence. These findings are similar to a national survey among hospital-based workers in Turkey which reports verbal violence

experienced by 43.2% and physical violence by 6.8% HCWs.²¹ However, large-scale surveys in Congo, Palestine and Iraq report overall violence experienced by hospital-based HCWs ranging from 80.4% to 85%.^{6 22 23} One possible reason for the extremely high frequencies in these countries could be the effect of conflicts in these

Table 6 Predictors of violence against healthcare workers in basic health units and private clinics who experienced violence (n=628)

	Any form of violence		Physical violence		Verbal violence	
	Adjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value	Adjusted OR (95% CI)	P value
Age						
18–29 (n=163)	1		1		1	
30–44 (n=312)	1.21 (0.70 to 2.11)	0.479	1.66 (0.48 to 5.67)	0.419	1.16 (0.64 to 2.11)	0.609
45 and above (n=153)	1.85 (0.88 to 3.87)	0.102	0.32 (0.04 to 2.33)	0.261	2.72 (1.21 to 6.09)	0.015
Work experience						
1–4 years (n=219)	1		1			
5–9 years (n=149)	1.03 (0.59 to 1.78)	0.907	1.06 (0.34 to 3.29)	0.917	1	
10 years and above (n=260)	1.04 (0.57 to 1.90)	0.882	1.48 (0.44 to 4.99)	0.523	0.85 (0.47 to 1.55)	0.614
Gender						
Male (n=497)	1		1		1	
Female (n=131)	1.38 (0.86 to 2.19)	0.172	0.77 (0.36 to 2.27)	0.642	1.38 (0.84 to 2.19)	0.198
Province						
Punjab (n=163)	1		1		1	
Sindh (n=300)	0.86 (0.49 to 1.30)	0.379	0.56 (0.19 to 1.67)	0.301	0.91 (0.53 to 1.54)	0.729
Khyber Pakhtunkhwa (n=165)	1.43 (0.86 to 2.39)	0.16	0.87 (0.30 to 2.47)	0.795	1.48 (0.85 to 2.58)	0.166
Type of workplace						
Private clinic (n=293)	1		1		1	
Basic health unit (n=335)	2.55 (1.66 to 3.91)	<0.001	2.25 (0.83 to 6.12)	0.109	2.22 (1.39 to 3.55)	0.001
Job title						
Support staff (n=113)	1		1		1	
Doctor (393)	1.04 (0.62 to 1.74)	0.881	1.28 (0.44 to 3.70)	0.648	1.17 (0.65 to 2.10)	0.594
Nurse (n=62)	1.37 (0.59 to 3.16)	0.459	0.00 (0.00 to 0.00)	Not applicable	1.97 (0.79 to 4.86)	0.141
Technician (n=60)	0.96 (0.46 to 2.02)	0.926	0.32 (0.03 to 2.90)	0.313	1.31 (0.58 to 2.94)	0.514

countries. Among the factors that influenced experience of violence in primary, secondary and tertiary care hospitals in this study, age, work experience and gender

had no significant effect on experiencing violence in this study. Similarly, no trends were observed for work experience and violence in this study, which is consistent

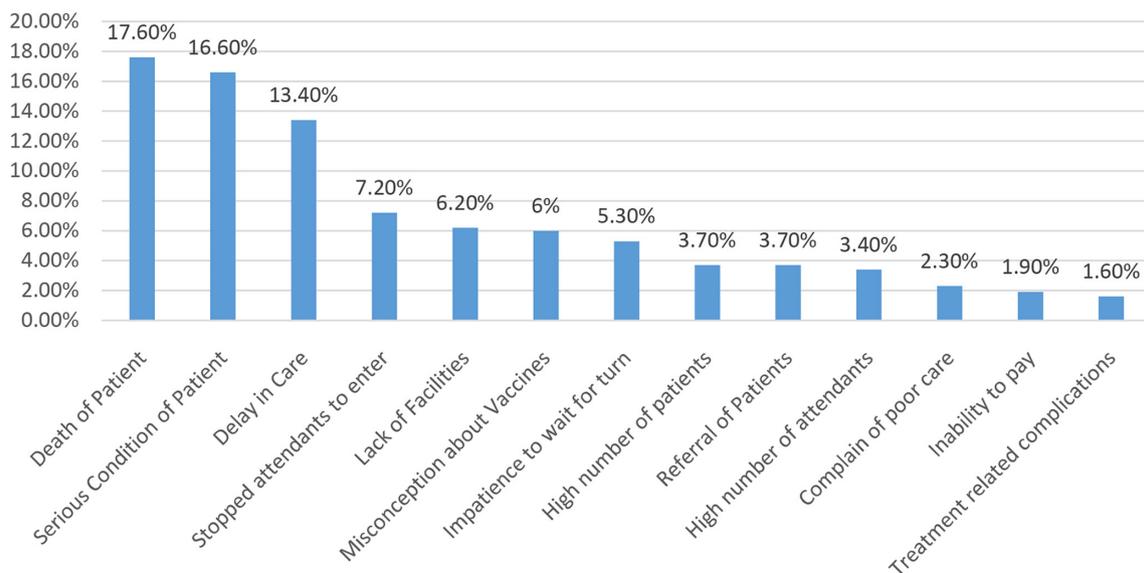


Figure 1 Reasons for physical violence experienced (n=567).

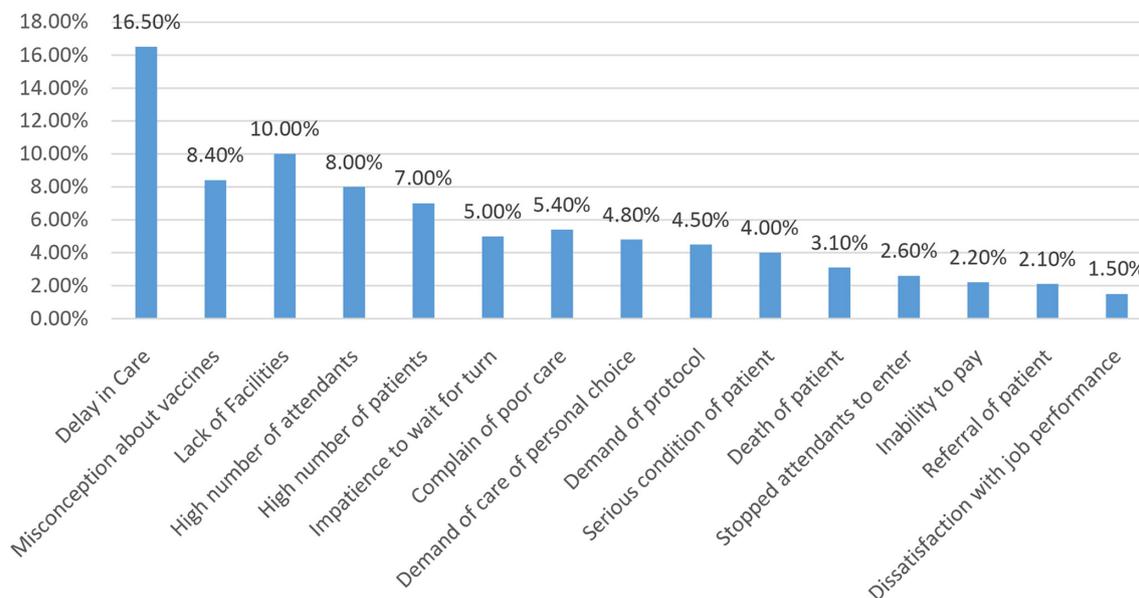


Figure 2 Reasons for verbal violence experienced (n=2909).

with a national survey in Turkey.²¹ Lack of significant association of gender and work experience in this study reflects that it is the institutional factors in hospitals that influence the experience of violence more than personal factors. In tertiary care hospitals, HCWs in big cities of other provinces were significantly more likely to experience violence as compared with the big city of Punjab (Lahore). This can be explained by the fact that Punjab, being a very large province, has less burden of patients in its major city Lahore, and the distribution of patients is more uniform than the other two provinces. At the primary healthcare level no significant difference was observed between provinces because utilisation and patient burden are relatively similar across provinces. HCWs in private hospitals were significantly less likely to experience physical as well as verbal violence in tertiary, secondary and primary hospitals. This finding is consistent with other studies, including the national surveys in Turkey and Taiwan.^{21–24} It is observed that public hospitals are more overcrowded and under-resourced in comparison with private hospitals; therefore, they are also more likely to face violence. Among the different departments of hospitals, emergency departments were significantly more likely to experience physical as well as verbal violence in both secondary and tertiary care hospitals, while the chance of occurrence was uniformly distributed between other departments. This finding is also consistent with previous studies in hospitals of Italy, China, Bangladesh and Ethiopia.^{25–28} Among the different types of HCWs, in comparison with administration staff, security guards were significantly more likely to experience verbal violence in tertiary care hospitals, while the chance of occurrence was uniformly distributed between doctors, nurses and technicians. Understandably, guards are the first point of contact, which puts them at higher risk.

Among the fieldworkers, female HCWs were significantly more likely to experience verbal violence. While studies for comparisons in field health workers are not available, significant association of gender is indicative of different dynamics of fieldwork, where social factors tend to contribute along with institutional factors. The higher frequency of violence among women may be explained by the lack of acceptance and respect for women to do fieldwork in the society. Among the different types of field HCWs, emergency vehicle operators were significantly more likely to experience verbal violence with reference to LHWs. This is understandable as this is the group that mostly is the first point of contact dealing with medical emergencies.

Understandably, attendants were the chief perpetrators of all forms of violence, ranging from 67.7% to 90.5%, followed by patients, ranging from 6.7% to 14.4%. Peer-perpetrated violence accounted for 1.2%–13.2% of the different forms of violence. This is consistent with previous literature in which attendants have been reported as chief perpetrators, accounting for 71.7%–94.9% of violence against HCWs,²⁹ while peer-perpetrated violence ranged from 5.1% to 14.3%.^{30–31}

Based on the reasons reported by the HCWs in this study, they may be categorised into reasons related to patient condition and outcome, reasons related to quality of services, reasons related to resources, reasons related to patients' behaviour, job-related reasons and psychosocial reasons, although the categories can be cross-cutting as many interacting factors together encompass violence.³² In primary, secondary care and tertiary care hospitals, the main reasons related to patient condition and outcome included death of the patient and serious condition. Therefore, it is important to work on HCWs' skills in emergency communication, including breaking bad news and de-escalation of aggressive behaviour,

Table 7 Interventions to prevent violence against HCWs in hospitals

Reasons	Interventions	Potential to reduce the events
For HCWs in hospitals		
Reaction to patient condition: <ul style="list-style-type: none"> ▶ Death. ▶ Serious condition. ▶ Treatment-related complication. 	Training of HCWs in: <ul style="list-style-type: none"> ▶ Emergency care. ▶ Emergency communication. ▶ De-escalation skills. 	15% verbal violence. 30% of physical violence.
Quality of care: <ul style="list-style-type: none"> ▶ Delay in care. ▶ Poor care. 	Training of HCWs in: <ul style="list-style-type: none"> ▶ Improving responsiveness towards patients. Policies on: <ul style="list-style-type: none"> ▶ Minimum response and waiting time. ▶ Information on waiting time. ▶ HCW performance assessment on behaviour, promptness of response, consultation time and quality of care. ▶ Complaint counters for clients. 	20% of physical violence. 25% verbal violence.
Lack of resources: <ul style="list-style-type: none"> ▶ Drugs, equipment, beds. ▶ Human resources. 	Policies on: <ul style="list-style-type: none"> ▶ Patient to HCW ratio. ▶ Availability of medicines, supplies and equipment based on service delivery standards for level of care and distribution of disease burden. 	10% physical violence. 25% verbal violence.
Patient behaviour: <ul style="list-style-type: none"> ▶ Overcrowding. ▶ Impatience to wait. ▶ Demand of care of personal choice. ▶ Expectation of protocol. ▶ Referral. 	Educational measures: <ul style="list-style-type: none"> ▶ Awareness campaigns on the importance of one attendant policy, waiting for their turn and following the instructions of HCWs related to treatment, admission and care. ▶ Awareness and information about referral. Regulatory measures: <ul style="list-style-type: none"> ▶ Adherence to access restriction policies of hospitals. ▶ Making assault a non-bailable offence. 	20% physical violence. 30% verbal violence.
Job-related reasons: <ul style="list-style-type: none"> ▶ Dissatisfaction with job performance. ▶ Disagreeing on job conditions. ▶ Being late or absent. 	<ul style="list-style-type: none"> ▶ Zero tolerance policy at organisational level. ▶ Grievance policies for junior-level staff. 	2.5% physical violence. 4% verbal violence.
For HCWs in ambulance services		
Reaction to patient condition: <ul style="list-style-type: none"> ▶ Death. ▶ Serious condition. ▶ Treatment-related complication. 	Training of HCWs in: <ul style="list-style-type: none"> ▶ Emergency care. ▶ Emergency communication. ▶ De-escalation skills. 	10% verbal violence. 30% of physical violence.
Quality of care: <ul style="list-style-type: none"> ▶ Delay in arrival and shifting the patient. ▶ Poor care. 	Training of paramedics on: <ul style="list-style-type: none"> ▶ Emergency care and shifting of the patient. Policies on: <ul style="list-style-type: none"> ▶ Minimum response time. ▶ Information on waiting time. ▶ Upscaling services based on burden. 	45% of physical violence. 50% verbal violence.
Lack of resources: <ul style="list-style-type: none"> ▶ Equipment in ambulances for provision of standard prehospital emergency care. 	<ul style="list-style-type: none"> ▶ Financial investment to equip ambulance services and set prehospital emergency care standards. 	10% physical violence. 10% verbal violence.
Patient behaviour: <ul style="list-style-type: none"> ▶ Demand of care of personal choice. ▶ Demand of speeding up ambulance. ▶ Expectation of protocol. 	Educational measures: <ul style="list-style-type: none"> ▶ Awareness campaigns on the importance of following the instructions of HCWs. Regulatory measures: <ul style="list-style-type: none"> ▶ Making assault a non-bailable offence. 	10% physical violence. 25% verbal violence.
Job-related reasons: <ul style="list-style-type: none"> ▶ Dissatisfaction with job performance. ▶ Disagreeing on job conditions. ▶ Being late or absent. 	<ul style="list-style-type: none"> ▶ Zero tolerance policy at organisational level. ▶ Grievance policies for junior-level staff. 	5% physical violence. 5% verbal violence.
For LHWs and vaccinators		

Continued

Table 7 Continued

Reasons	Interventions	Potential to reduce the events
Quality of care: <ul style="list-style-type: none"> ▶ Delay in care. ▶ Poor care. 	Training of LHWs and vaccinators: <ul style="list-style-type: none"> ▶ MNCH care and vaccination. Policies on: <ul style="list-style-type: none"> ▶ Minimum response time. ▶ Information on waiting time. 	35% of physical violence. 15% verbal violence.
Patient behaviour: <ul style="list-style-type: none"> ▶ Misconception about vaccines. ▶ Misconception about family planning. ▶ Complaint of repeated visits. ▶ Referral. 	Educational measures: <ul style="list-style-type: none"> ▶ Revise the strategy to accommodate the concerns of people and build national consensus on existing controversies related to vaccination and family planning. Regulatory measures: <ul style="list-style-type: none"> ▶ Making assault a non-bailable offence. 	60% physical violence. 80% verbal violence.
Job-related reasons: <ul style="list-style-type: none"> ▶ Dissatisfaction with job performance. ▶ Disagreeing on job conditions/ salary. ▶ Being late or absent. 	<ul style="list-style-type: none"> ▶ Zero tolerance policy at organisational level. ▶ Grievance policies for junior-level staff. 	2% physical violence. 5% verbal violence.

HCWs, healthcare workers; LHWs, lady health workers; MNCH, Maternal Neonatal and Child Health.

which has great potential for averting more severe forms of violence against them. Interventional studies in which HCWs have been trained in communication and de-escalation skills have shown significant reduction in perceived patient aggression and improvement in coping with patient aggression.^{33 34} The main reasons related to quality of services include delay in care (medication, procedure, attending patient, long waiting time, shifting patient and starting treatment) and complaints of poor care (medication, dosage, handling of patient, behaviour of doctor). In terms of diagnostic departments, delay in reporting and wrong reporting were highlighted the most. Therefore, it is important to train HCWs in maintaining dignity, confidentiality, autonomy and respectful communication. Policies on minimum response and waiting times and informing the patients/attendants about the time required to initiate the treatment need to be introduced. The performance of HCWs should also be periodically reviewed based on his/her behaviour, timely response, consultation time and quality of care. Reasons related to lack of resources include lack of facilities and human resources. It is imperative to introduce standards on patient to HCW ratios and staff the facilities based on patient volume in the hospital. The availability of medicines, supplies and equipment should be based on determined service delivery standards for level of care and distribution of disease burden. Reasons related to patient behaviour include overcrowding due to high number of attendants, stopping attendants to limit their access, impatience to wait for turn and demand of care of personal choice (doctor, medicine, admission, procedure, home care). These require educational as well as regulatory measures. Educational measures include awareness campaigns on the importance of one attendant policy, waiting for their turn and following the instructions of HCWs related to treatment, admission and care.

An interventional study from Iran which focused on patient education has reported reduction in the events of violence by 18.6%.³⁵ Regulatory measures include adherence to access restriction policies of hospitals. Job-related reasons perpetrated by colleagues or seniors included dissatisfaction with performance, being late or disagreeing on job conditions. However, these reasons only accounted for up to 2.5% of physical violence and 4% of verbal violence, possibly because they are likely to be under-reported as well. The way forward to deal with this kind of peer violence would be to introduce grievance policies for junior-level staff and zero tolerance policy at the organisational level so that all matters are resolved through respectful communication rather than resorting to any form of violence.

Among ambulance workers, specific reasons included late arrival of ambulance, delay in shifting the patient and complaints of poor care. This is indicative of insufficient ambulance services which are not at par with the volume of services needed and standards of emergency care. Therefore, it is imperative that the needed services are estimated based on the burden of patients, and standards of maximum response time should be set. Moreover, skilled paramedics ensuring the promptness and safety while shifting the patients and providing them standard emergency care would strengthen the confidence of the attendants in the services.

Dominant reasons among LHWs and vaccinators were related to behaviour of clients. The most frequently reported was misconception about vaccines, followed by misconception about family planning, referral of the patient and complaints of repeated visits by clients. While there have been many attempts of awareness intervention in changing the perceptions of people regarding vaccination and family planning, there is a need to revise the strategy to accommodate the concerns of people

and build national consensus on existing controversies related to these services.

Study limitations

The main limitation in this study is that the number of clusters required for the calculated sample size was not statistically determined. Instead, the number of cities to be taken from each province was conveniently determined due to limited resources. Moreover, the province of Baluchistan, northern areas of Gilgit Baltistan, tribal areas in Khyber Pakhtunkhwa and areas from Azad Jammu & Kashmir have not been included mainly due to limited resources and partly due to security concerns. Still, inclusion of four districts from different regions within each province and the provincial capital provides good evidence of the overall larger picture within the provinces. Second, in response-based studies, there is always a chance of under-reporting and over-reporting bias. Moreover, there is also a wish bias in which respondents tend to perceive a certain situation through their own lens. Third, some of the risk factors identified in the literature have not been covered in this study. Working in shifts showed positive association with experiencing violence in a nationwide survey on nurses in Lebanon.³⁶ In another study in China, low empathy levels showed positive association with experiencing violence.³⁷ It is however practically very difficult to include variables requiring data on multiple items in an extremely large-scale survey, which requires training many data collectors.

Way forward

As classified in the analysis, we propose interventions according to the reason and the potential of these interventions to reduce the incidents of violence. Table 7 summarises the interventions for hospital workers, ambulance workers and LHWs and vaccinators. Based on the findings of the report, the following recommendations are being made:

- ▶ There is a need to train HCWs in skills in emergency communication and skills to de-escalate violence. It is also important to apprise them of maintaining dignity, confidentiality, autonomy and respectful communication with patients and attendants.
- ▶ Policies on minimum response and waiting time and informing the patients/attendants about the time required to initiate the treatment need to be introduced. Grievance-redressal policies for staff and a zero tolerance policy for addressing violence at the organisational level should also be introduced in all healthcare organisations.
- ▶ Standards on patient to HCW ratios need to be introduced and facilities should be staffed based on patient volume in the hospital.
- ▶ The availability of medicines, supplies and equipment should be ensured based on determined service delivery standards for level of care and distribution of disease burden.

- ▶ There is a need to ensure adequate security resources and infrastructure at healthcare facilities for protection of healthcare.
- ▶ Efforts should also be directed towards improving the behaviour of patients and attendants towards HCWs:
 - Educational measures include awareness campaigns on the importance of one attendant policy, the need to wait for their turn and to follow the instructions of HCWs related to treatment, admission and care.
 - Regulatory measures include adherence to access restriction policies of hospitals.
- ▶ For ambulance services:
 - It is imperative that the needed services are estimated based on the burden of patients, and standards of maximum response time need to be set.
 - Skilled paramedics ensuring promptness and safety while shifting the patients and providing them with standard emergency care would strengthen the confidence of the attendants.
 - Financial investment to equip ambulance services per prehospital emergency care standards is also required.
 - Awareness campaigns aimed at recognising the limitations of ambulances on roads will help in managing the unreasonable expectations of the people.
- ▶ For LHWs and vaccinators, there is a need to revise the strategy to accommodate the concerns of people and build national consensus on existing controversies related to these services.

CONCLUSION

Violence against healthcare exists in various forms among all cadres and at different levels of care. The gaps in capacity, resources and policies are evident. Specific strategies need to be adopted for different types of HCWs to protect them against violence.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not required.

Ethics approval Ethical approval of the study was taken from the National Bioethics Committee.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available upon request to the principal investigator (SS) (shiraz.shaikh@jmsu.edu.pk).

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