

## Risky work: Accidents among Nepalese migrant workers in Malaysia, Qatar and Saudi Arabia

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### Abstract

**Background:** Nepal is a growing supplier of migrant labour for factories in Malaysia and building sites in the Middle East. This study assessed the extent of workplace accidents among Nepalese migrant workers in Malaysia, Qatar and Saudi Arabia.

**Methodology:** A questionnaire survey was conducted at Nepal's main international airport with men who returned from working in Malaysia, Qatar and Saudi Arabia. The questionnaire was completed by 403 migrant workers from these three countries. Where possible the questionnaire was self-administered and interview-administered for those migrant workers with poor literacy skills. A logistic regression was conducted to identify factors associated with accidents at work and health risks perceived by migrant workers themselves.

**Results:** One in six (17%) experienced accidents at work in their host country. This proportion is lower than that reported in previous studies of Nepali migrant workers. Age, country of work, doctor registration and perceived standard of work environment and accommodation are significantly associated with accidents at work.

**Conclusion:** To help improve Nepalese men's health and well-being whilst working abroad, host countries and the Government of Nepal should ensure that migrants hold health insurance. Mandatory pre-departure and arrival health and safety training is also recommended as a way to reduce risks to the health of migrant workers.

**Keywords:** Asia, host country, labour, risk, accidents, migrant workers, Middle East

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**Tweetable abstract:** The study suggests working in the Middle East riskier than Malaysia for Nepali migrant workers..

## Introduction

Work-related migration, like migration in general, is on the increase. The number of people living and working abroad continues to rise and there has been significant growth in temporary labour migration from Low Income Countries (LIC) to High Income Countries (HIC) (1). Several HIC-based studies (e.g. from Canada, Spain, Germany and the United States) indicate that immigrants are over-represented in physically demanding high-risk jobs including manufacturing, construction and farming (2, 3) and have higher rates of occupational injury than native-born workers (3, 4).

Currently, over a million Nepalese migrants, mostly from a rural background, work in Malaysia and the Middle East, mainly in semi-skilled and unskilled jobs (5). Most temporary migrant workers in these countries work in risky industries such as construction, manufacturing and farming (6, 7). Some of the key reasons for the migration of these temporary workers include

employment opportunities abroad and associated high exchange rates (7, 8). Concurrent with the increase in foreign migrant workers, there has been a significant rise in the remittances Nepal receives (5, 9). For example, in 2013 Nepal received US \$4.5 billion remittances from migrant workers, almost equivalent to a quarter of its national income (10), but in 2015 this had risen to US \$6.6 billion (11).

Published studies indicate that migrant workers worldwide face risks of workplace accidents and other lifestyle-related risks, such as the use of tobacco and alcohol (7, 12). This wider literature also shows that construction and manufacturing industries are among the most dangerous sectors to work-in globally (13, 14). Poor work environment, including an absence of safety measures and equipment are the leading causes of accidents and injuries [15-17]. Therefore, migrant construction and factory workers, often illiterate, face a double burden of working in a dangerous sector from a disadvantaged position.

Media reports have estimated that around 600 Nepalese workers died abroad in 2009 and over 800 in 2010 (17). Most of the deaths occurred in the Middle East, with 323 deaths in Saudi Arabia, 192 in Qatar and 84 in the United Arab Emirates (UAE) and 84 in Malaysia. It has been reported that most deaths are due to work-related hazards, road accidents and frustration among workers leading to suicide (18). A more recent media report has highlighted that over 1,300 Nepali migrants working abroad died in the past three and half years due to work-related accidents, road accidents, suicides and murders (19); the majority of deaths occurred in the Middle East (350 in Saudi Arabia; 306 in Qatar; and 125 in UAE and 441 in Malaysia). It has been suggested that most deaths occur due to a lack of awareness of local conditions among migrant workers and their inability to understand local languages; some fatalities could have been avoided by pre-departure orientation classes on the workplace and road safety and on ways to deal with adverse climatic conditions (19).

Despite all these, there have been very few studies on the health-related accident status of migrant workers and none on male Nepalese migrant workers in the construction and factory industries of Qatar, Saudi Arabia and Malaysia. Consequently, this gives credence to the focus of this research in these countries and to assess the extent of workplace accidents in these risky industries.

## Methods

Using a questionnaire, this cross-sectional study examined the perceived health risks and accidents at work for Nepalese construction and factory workers (over the age of 18 years) who had worked in Malaysia, Qatar and Saudi Arabia for over six months. The questionnaire was designed and piloted prior (20) to the main study. Data were collected by one of the authors (PA) and a native speaker, in Nepal during 2011 from a total of 403 migrants. The questionnaire was self-administered by those migrant workers who were literate and administered by PA for those workers who were illiterate. Male respondents were approached at Nepal's international airport and nearby accommodation, and selected using a convenience sampling method (21). The questionnaire included questions on health and lifestyle, working and living conditions and the use of health services in the previous 12 months (=recall period). Many of these questions had previously been used in other validated questionnaire studies, e.g. a health and lifestyle survey of Nepalese migrants in UK (22); a social survey of Chinese migrants and views on their work, education, and living conditions in Russia (23); and the Vietnam migration survey (24).

Additional questions were identified based on a review of the literature and were incorporated into the final questionnaire. Researchers with similar professional backgrounds were requested to provide feedback to improve the research questionnaire. Informed consent was obtained verbally and confidentiality was guaranteed as identifiers were removed.

Self-reported and perceived health risks, and migrant workers having accidents at work, were the main outcomes and coded as 'yes-no' answers in SPSS (version 18.0) subsequently were cross-tabulated against exploratory factors such as demographic and socio-economic characteristics and participants' health and lifestyle. Descriptive statistical techniques were applied and the outcomes used in logistic regression analyses. Multivariate logistic regression analyses were applied to find out which factors were significantly associated with accidents at work

and perceived health risks when adjusting for other variables. For the analysis, independent variables were added in blocks of demographic, socio-economic, type of job, country of work, health and lifestyle characteristics. Ethical approval was granted by the Nepal Health Research Council (Ref no: 462 and 1190).

## Results

### Characteristics of Nepalese male migrant worker respondents

Study participants (n=423) were approached at the research site in Nepal. The vast majority (n=403 or 95.0%) agreed to participate and completed the survey questionnaire and those responses were included for analysis. Those twenty migrant workers declining appeared generally too busy to undertake the survey.

Forty six percent of respondents were aged between 20-29 years. Twenty seven percent of respondents originated from a higher caste (Brahmin/Chhetri) and nearly all (91%) were married. Almost two-thirds of respondents were satisfied with their living conditions in their host country. Nearly a quarter of respondents had no formal education and just under half had received primary education as their highest education level (Table 1).

The majority (69%) of migrant workers had semi-skilled jobs (e.g. factory workers, carpenters and electricians) and the remainder had unskilled occupations e.g. labourer. Just over a fifth reported that their work environment was poor or very poor. About two-thirds of migrants were protected by employers' health insurance and almost three-quarters had registered with a doctor abroad. A quarter of respondents considered their diet poor or very poor. Two-thirds of the sample smoked and about half consumed alcohol regularly. Nearly all (93%) respondents reported that they did not take exercise most days (Table 1). One in six (17%) respondents reported they had experienced accidents and injuries (e.g., road accident, cuts, fall, heart attack etc.) at work. Approximately half (46%) of the migrant workers perceived health risks at work and the risks, including hearing problems, vision problems, skin problems, muscular pain, injuries and heart disease.

### Factors associated with perceived health risks and accidents at work

Multivariate logistic regression analysis indicated there were two key statistically significant variables associated with perceived health risks at work (Table 2); marital status and work environment. Marital status was significantly associated with perceived health risks ( $P=0.022$ ) and unmarried respondents were significantly less likely ( $OR=0.4$ , 95% confidence interval  $[CI]=0.1-0.9$ ) to perceive health risks at work. Respondents who rated their work environment as poor or very poor were 2.5 times more likely (95%  $CI=1.5-4.4$ ) to perceive that they had health risks at work (Table 2).

In contrast, there were five key statistically significant variables associated with accidents at work: (a) age; (b) accommodation; (c) work environment; (d) country of work and (e) doctor registration. Interestingly, respondents aged 40 and above were four times more likely (95%  $CI=1.7-9.7$ ) to experience work-related accidents compared with those aged 20-29 years. Accommodation was significantly associated with accidents at work; respondents not satisfied with their accommodation were nearly twice as likely ( $OR=1.9$ , 95%  $CI=1.1-3.4$ ) to experience accidents at work compared to those who were satisfied. There

Table 1 Nepalese male migrant worker respondents (403) in the Middle East and Malaysia

Variables	n	%
<b>Health Status</b>		
Good/fair	350	86.8
Poor/very poor	53	13.2
<b>Mental health symptom in the last month</b>		
No	310	77.0
Yes	93	23.0
<b>Age</b>		
20-29 years	185	45.9
30-39 years	158	39.2
40+ years	60	14.9
<b>Ethnicity</b>		
Brahmins/Chhetri	108	26.8
Others (Gurung/Tamang/Magar/Rai/Limbu/ Newar/Sherpa/Tharu/Terai ethnic group etc.)	295	73.2
<b>Marital Status</b>		
Married	368	91.3
Unmarried	35	8.7
<b>Satisfaction with the accommodation abroad</b>		
Satisfied	263	65.3
Not satisfied	140	34.7
<b>Education</b>		
Sec/SLC/HS (RC)	118	29.3
Primary	186	46.2
None	99	24.6
<b>Current occupation in host countries</b>		
Semi-skilled job	279	69.2
Unskilled job	124	30.8
<b>Work environment</b>		
Very good/good/fair	317	78.7
Poor/very poor	86	21.3
<b>Country of work</b>		
Malaysia	134	33.3
Middle East	266	66.6
<b>Duration of stay abroad</b>		
<4 years (RC)	241	59.8
≥ 4 years	162	40.2
<b>Work hours (average per week)</b>		
≤70 hours (RC)	249	61.8
>70 hours	154	38.2
<b>Income in Nepalese Rupees (per annum)</b>		
>150000 (\$1701) (RC)	162	40.2
≤150000 (\$1701)	241	59.8
<b>Has health insurance</b>	251	62.3
<b>Has doctor registration</b>	284	70.5
<b>Perceives himself to have a health risk at work</b>	187	46.4
<b>Diet perceived to be</b>		
Good/fair	296	73.4
Very poor/poor	107	26.6
<b>Current smoking smoker</b>	266	66.0
<b>Currently consumes alcohol</b>	202	50.1
<b>Takes part in exercise most days</b>	29	7.2

Notes: HS- Higher Secondary (including College & University); RC- Reference Category; Sec- Secondary; SLC- School Leaving Certificate

is a strong and significant association between perceptions of the work environment and accidents at work. Respondents who reported their work environment as poor or very poor were 3.5 times more likely (95% CI=1.8-6.7) to experience work-related accidents compared to those who reported a very good/good or fair working environment. Similarly, respondents who worked in the Middle East were 3.6 times more likely (95% CI=1.5-8.5) to experience work-related accidents compared to those respondents who worked in Malaysia. Respondents not registered with a doctor were significantly less likely (OR=0.3, 95% CI=0.1-0.7) to experience a work-related accident compared with those who had registered (see Table 2).

## Discussion

### Work-related accidents

This study found that almost 17% of Nepalese migrant workers had experienced work-related accidents in Qatar, Saudi Arabia and Malaysia. This prevalence of work-related accidents is lower than that recorded in a previous study (25%) among Nepalese migrants working in the Gulf-countries (7) and among Nepalese factory workers (22%) in Nepal (25). Although the accident rate reported in this study is comparable to the findings of general studies among construction workers in developed countries such

as the USA (20%), Australia (17%) and New Zealand (14%) (26), it is higher than that recorded among manufacturing workers in Australia (10%) and New Zealand (9%) (26). Of course, as this study interviewed returnees to Nepal its prevalence does not include fatal accidents. Nevertheless, there are five key statistically significant variables (discussed below) associated with accidents at work: the age of the workers; their satisfaction with accommodation in their host country; perceived work environment; country of work; and registration with a doctor.

### Age and accidents at work

The results of this study indicate that older migrants (40+ years) were four times more likely to have workplace-related accidents than younger age groups. It is known that most experienced worker are older people. Older workers having worked more years and hence having more exposure increasing the risk of an accident (32, 33). Older age as a risk factor for workplace accidents has been identified by other studies (7, 26, 27). However, findings to the contrary, i.e. younger age groups (<30 years) are more likely to experience work-related injuries, have also been reported (28, 29). Most participants in this study were classed as unskilled or semi-skilled, and had been 'on the job' for relatively short periods of time, although all had been

**Table 2: Logistic regression models of accident at work and perceived health risks on 403 Nepalese male migrant workers working in the Middle East and Malaysia**

Variable	Accidents at work		Perceived health risks	
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value
<b>Demographic characteristics</b>				
<b>Age</b>		<b>0.007</b>		
20-29 years (RC)	1.0		1.0	
30-39 years	1.6 (0.8-3.3)	0.161	0.9 (0.5-1.4)	0.572
40 + years	4.0 (1.7-9.7)	0.002	0.6 (0.3-1.1)	0.102
<b>Ethnicity</b>				
Brahmins/Chhetri (RC)	1.0		1.0	
Others	0.9 (0.5-2.0)	0.990	1.2 (0.7-2.0)	0.425
<b>Marital Status</b>				
Married (RC)	1.0		1.0	
Unmarried	0.9 (0.3-3.0)	0.828	0.4 (0.1-0.9)	<b>0.022</b>
<b>Satisfaction with the accommodation abroad</b>				
Satisfied (RC)	1.0		1.0	
Not satisfied	1.9 (1.1-3.4)	<b>0.034</b>	1.5 (0.9-2.3)	0.103
<b>Education</b>				
Sec/SLC/HS (RC)	1.0		1.0	
Primary	1.5 (0.7-3.1)	0.298	1.2 (0.7-2.1)	0.473
None	0.8 (0.3-2.0)	0.595	0.8 (0.4-1.6)	0.524
<b>Occupation and socio-economic characteristics</b>				
<b>Current occupation in host countries</b>				
Semi-skilled job (RC)	1.0		1.0	
Unskilled job	0.6 (0.3-1.2)	0.154	1.3 (0.7-2.2)	0.397
<b>Work environment</b>				
Very good/good/fair (RC)	1.0		1.0	
Poor/very poor	3.5 (1.8-6.7)	<b>&lt;0.001</b>	2.5 (1.5-4.4)	<b>0.001</b>
<b>Country of work</b>				
Malaysia (RC)	1.0		1.0	
Middle East	3.6 (1.5-8.5)	<b>0.004</b>	1.7 (0.9-3.1)	0.074

<b>Duration of stay abroad</b>				
< 4 years (RC)	1.0		1.0	
>= 4 years	0.6 (0.3-1.2)	0.129	0.8 (0.5-1.2)	0.300
<b>Work hours (average per week)</b>				
<= 70 hours (RC)	1.0		1.0	
> 70 hours	1.6 (0.8-3.2)	0.147	1.2 (0.7-1.2)	0.455
<b>Income in Nepalese Rupees (per annum)</b>				
> 150000 (\$1701) (NC)	1.0		1.0	
>= 150000 (\$1701)	0.9 (0.5-1.8)	0.836	0.2 (0.6-1.5)	0.821
<b>Health insurance</b>				
Yes (RC)	1.0		1.0	
No	1.4 (0.7-2.8)	0.321	0.9 (0.6-1.6)	0.795
<b>Doctor registration</b>				
Yes (NC)	1.0		1.0	
No	0.3 (0.1-0.7)	<b>0.003</b>	1.6 (0.9-2.7)	0.114
<b>Health and lifestyle characteristics</b>				
<b>Diet</b>				
Good/fair (RC)	1.0		1.0	
Very poor/poor	0.6 (0.3-1.2)	0.166	1.4 (0.8-2.3)	0.196
<b>Current smoking status</b>				
Non-smoker (RC)	1.0		1.0	
Smoker	0.7 (0.4-1.7)	0.228	0.7 (0.4-1.1)	0.123
<b>Current alcohol consumption status</b>				
Non-alcoholic (RC)	1.0		1.0	
Alcoholic	0.9 (0.5-1.7)	0.728	1.0 (0.6-1.6)	0.917
<b>Take part in exercise most days</b>				
Yes (RC)	1.0		1.0	
No	2.8 (0.6-13.3)	0.197	1.9 (0.8-4.6)	0.155
Nagelkerke R Square	0.219		0.166	

Notes: HS- Higher Secondary (including College and University); RC- Reference Category; Sec- Secondary; SLC- School Leaving Certificate; Semi-skilled jobs with a certain level of skills including factory workers, plumbers, carpenters, painters, bricklayers, electrician, supervisor etc.

working more than six months in their roles. It is therefore likely that older Nepalese migrant workers in this study had not been able to accumulate the necessary additional skills compared to younger workers. This is counter intuitive, but the underlying explanations are, first, that older workers abroad do not bring with them skills from Nepal that give them an advantage over younger migrant workers. And secondly, that perhaps the jobs abroad are either very different from what they have done in the past in Nepal and/or require such a low skill level that there is little opportunity to learn new skills.

Older workers may also have had to cope with physiological changes associated with ageing. It is known that muscle strength starts to decline with increasing age (30, 31). Therefore, the increased risk of having an accident for older migrants, especially among those aged 40+ years could be due to physiological changes associated with ageing. Further, older age groups might have additional risk factors that make them more prone to accidents (32, 33). In this study, most older migrant workers are married and have greater family responsibilities and could therefore be experiencing more anxiety. This could be another

reason for them being more prone to work-related accidents than younger workers.

#### **Satisfaction with accommodation and accidents at work**

The occurrence of work-related accidents is significantly related to satisfaction with accommodation in the country of work. Poorer accommodation may lead to poorer sleep or rest and people may not be as alert at work compared with those well-rested. Work-related accidents associated with sleep disturbance are well documented in the literature (34, 35).

#### **Work environment and accidents at work**

The work environment is significantly associated with accidents at work. People who perceive their work environment as poor or very poor are 3.5 times more likely to report accidents than those who perceived their work environments to be good or very good. Work-related accidents and injuries associated with a poor work environment are well documented in the media (16, 36). Importantly, a poor work environment is a well-recognised risk factor for work-related accidents in a number of Nepalese (7, 37,

38) and non-Nepalese studies (15, 39). Studies also found that a poor work environment, including an absence of safety measures and equipment, incorrect operating procedures, inadequate hazard awareness and insufficient use of protective equipment, results in more accidents and disability, mainly in construction and manufacturing industries (3, 15). Proper implementation of safety regulations at industrial sites and making the work environments safer should therefore be a priority for employers and policy makers (40, 41). Additionally, workers should be trained adequately in their jobs as well as in the application of any safety measures.

### Doctor registration and accidents at work

Migrants, who are not registered with a doctor are less likely to report work-related accidents compared to those who do register. The first possible explanation for this could be that those who experience accidents register at the time of the accident when attending clinics or doctors surgeries. A second explanation is that those working for companies with safer working methods are more likely to be given insurance coverage (42, 43) e.g. migrant workers who are covered by health insurance are much more likely to be registered with a doctor and so have easier access to one. Conversely, workers who are not registered with a doctor may have used self-medication and/or home treatment techniques in their host country (44). This explanation would only explain some of the minor accidents that people may have 'forgotten' to report in the questionnaire, so called under-reporting (45). Some of the perceived under-reporting might also be due to misconceptions and misunderstandings as to what constitutes an accident or workers hiding the fact that they were involved in an accident due to fear of losing their job (45).

### Work location and accidents at work

Migrant workers who worked in Qatar and Saudi Arabia were 3.6 times more likely to experience work-related accidents than those working in Malaysia. The possible explanation for these higher accident rates in the Middle East is undoubtedly due to the nature of the job, work environment and health and safety at work. Nepalese people in the Middle East worked in building and construction, whereas those in Malaysia worked in factories. The literature on migrant workers indicates that the construction industry is a very dangerous business globally and compared to other industries (14, 17, 25, 46). The second possible reason for higher numbers of accidents in the Middle East could be due to heat exposure. Many migrant workers in the Middle East work outside where they experience very high day-time temperature, which is generally recognised in the literature as a risk factor (7, 47). Similarly, a third possible explanation for higher accident rates could be the influence of a difference in health and safety standards in these two different locations (48). This would suggest that Malaysia has higher health and safety standards, but there is no available published evidence to back up this assertion.

### Perceived health risks

In the multivariate analysis, perceived health risk at work in this study was associated with marital status and the work environment. Unmarried people were significantly less likely (OR=0.4, 95% CI=0.1-0.9) to perceive health risks at work. One possible reason behind this may be that they simply perceived fewer risks because they had fewer social responsibilities if something went wrong. The results of this study resonate with

those of previous studies (49, 50). Similarly, workers rating their work environment as poor were two-and-a-half times more likely to perceive health risks at work than those who rated their work environment as good. Migrants working in poor environments, e.g. working long hours, with no safety training and communication difficulties at work (either in the host language or in English), are more likely to experience health risks at work. Associations between working conditions (i.e. long working hours, language problems, lack of safety training) and health problems, including accidents at work are well documented in the literature (3, 51-53).

### Strengths & limitations

This cross-sectional study is still the only one of its kind on the target population of male Nepali migrant workers. The two key weaknesses of this study are convenience sampling frame and the study location, i.e. in Nepal rather than host countries. As attempts to conduct the study in Qatar and Saudi Arabia were unsuccessful and a true sampling frame of returning workers to Nepal was impossible, this study had to use a convenience sampling frame. The lack of access for this research in the Middle East is regrettable, but understandable as it does not show the receiving countries in a good light.

### Conclusions

Almost one-fifth of respondents in this study experienced work-related accidents. Older workers are four times more likely than younger workers to report having had accidents at work, which contradicts some of the literature (7, 26-29). Workers who report poor living and working conditions are more likely to report accidents and injuries. The occurrence of workplace accidents is therefore strongly associated with perceptions of their accommodation and the work environment. Migrants who work in Qatar and Saudi Arabia in the construction industry are three times more likely to experience workplace accidents than those working in a Malaysian factory.

It is, therefore, argued that to reduce the health risks of workers in host countries the Government of Nepal should ensure that migrants are offered compulsory health insurance by the companies they work for, particularly in Middle Eastern destinations. Mandatory pre-departure health and safety training with refresher sessions on arrival are also strongly recommended.

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### Compliance with Ethical Standards

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**Conflict of Interest:** Author A declares that he has no conflict of interest. Author B declares that she has no conflict of interest. Author C declares he has no conflict of interest. Author D declares he has no conflict of interest.

**Ethical approval:** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and

with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Ethical approval was granted by Nepal Health Research Council (Ref no: 462 and 1190).

**Informed consent:** Verbal and/or written informed consent was obtained from all individual participants included in the study.

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