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Research Article

Frequency of Low Back Pain and Its Related Functional Disability in Security Guards

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Abstract

Security guards are integral to many organizations today, especially in Pakistan. However, there is not much research done to discover the health problems associated with the nature of their job. This study aims to estimate the prevalence of low back pain (LBP) in security guards in two cities in Pakistan. A cross-sectional descriptive study was designed that included male and female security guards who were residents of Islamabad and Dera Ghazi Khan and aged between 20 and 60 years. A convenience sampling technique was used for sampling, and a total of 580 participants responded to a structured questionnaire after signing the consent form. Feedback was collected hand to hand, and the statistical analysis was done on SPSS V20. The results show that the prevalence of LBP was 74.4% in Islamabad and 65.5% in Dera Ghazi Khan. Out of the total 580 participants (290 participants from Islamabad and 290 participants from Dera Ghazi Khan), 406 participants claimed to experience LBP once, with an overall prevalence of 70.12%. Prolonged standing was the most common aggravating factor other than prolonged sitting and lying. In addition to LBP, pain in other body parts was also reported, including the knee (52.2%), shoulder (14.1%), foot (10.1%), wrist (0.17%), and neck (0.74%). We concluded that the frequency of LBP and relative functional disabilities are higher in security guards due to job ergonomics and prolonged standing.

Keywords: LBP, Functional disabilities, Security guards.

1. Introduction

Low back pain (LBP) is defined as pain localized between the 12th rib and the inferior gluteal folds, with or without leg pain that lasted for at least 24 hours and had a pain score of 3 out of 10 or higher (Puntumetakul et al. 2015, Osborne et al. 2012). This definition of LBP is generally accepted and commonly used for epidemiological studies. LBP can lead to reduced leisure activities, physical activity loss, and quality of life. Moreover, it is the most common cause of job-related disability and leaves a person incapacitated (Hoy et al. 2012). LBP is a common disorder and is one of the major musculoskeletal pain problems in the general population. It affects people in various

occupations (like nursing, teaching, farming etc.), including security guards (Panahi et al. 2016). LBP is a major health problem that causes absence from work worldwide and limitations in activity. In many communities, it is a major problem resulting in individual consequences. It has several impacts on quality of life, like loss of physical ability, decreased muscular efficacy, and reduced ability to perform social duties. These can result in severe irritability, anxiety, and depression (Mustafa and Osama). Job dissatisfaction is also a major reason that leads to LBP (Manchikanti 2000, Van Poppel et al. 1998). The psychological health of police officers

Table: 1 General Characteristics of the Participants.

Characteristics	Frequency	Percent (%)
Gender		
Male	563	97.2
Female	16	2.8
Any history of fracture and/or other pathology and/or malignancies.		
Yes	66	97.2
No	513	2.8
Age		
15-30 Years	182	31.4
35-45 Years	252	43.5
45-60/>60 Years	145	25
Did you ever experience low back pain?		
Yes	406	70.1
No	173	29.9
Visual Analogue Scale.		
No pain.	91	15.6
Mild Pain (1-3 Score)	134	23.3
Moderate (4-6 Score)	142	24.4
Severe (7-10 Score)	213	36.7
Do you experience any pain other than back?		
Knee	303	52.3
Shoulder	82	14.2
Foot	59	10.2
Wrist	10	1.7
Neck	43	7.4
Other	82	14.2
What Increases your Low back pain?		
Standing	303	52.3
Sitting	82	20.1
Lying	59	14.5
What Relives your Low back pain?		
Standing	208	35.9
Sitting	66	11.3
Lying	305	52.5
When your pain starts at work?		
<2 Hour	272	46.9
<6 Hour	204	35.1
<8 Hour	86	14.8
>8 Hour	16	2.75

and security guards is more prone to damage than others because they experience violence during their Job (Leino et al. 2011, Beech and Leather 2006, Clair 2006, Webster et al. 2008); both minor and major injuries are due to work-related violence (Mayhew 2001, Wieclaw et al. 2006, Santos et al. 2009). Moreover, physical health disturbance, work-related distress, and damaged psychological health result in work dissatisfaction, and if this distress haunts the worker for a long period of time, then it leads to psychiatric disorder, i.e., mood swings and sleeping disorder (Mayhew 2001) impaired social life (Webster et al. 2008) and feeling emotionally disturbed (Renck, Weisæth, and Skarbö 2002).

In an international literature on the incidence of LBP, it is reported that the occurrence of LBP was greater in Canada, Netherlands, and Sweden as compared to the United States and Germany. This review gives a percentage of work affected that varied from 2 to 8%, with annual days of work missed ranging from 9 days in the US to 10 days in Germany, 20 days in Canada, 25 days in the Netherland, and 40 days in Sweden.

LBP is considered the third leading cause of hospital visits. The worldwide studies on the prevalence of LBP vary from 50% to 84% (Ahdhi et al. 2016). A global review shows LBP in the general population with a one-month prevalence of 23% (Manchikanti et al. 2014), with one-year prevalence of 38%, and a lifetime prevalence of approximately 40% (Manchikanti et al. 2014). Furthermore, in the coming decades, the frequency of individuals with LBP has a fair chance to increase substantially as the population ages over time. Several risk factors are associated with the development of LBP. These factors include prolonged standing, sleep disturbance (Kundermann et al. 2004), lack of education, history of musculoskeletal problem (Picavet, Schouten, and Smit 1999), low income (Meksawi, Tangtrakulwanich, and Chongsuvivatwong 2012), stress at work (Taylor

et al. 2014), carrying a gun on shoulders (Puntumetakul et al. 2015), lack of physical activity (Sitthipornvorakul et al. 2011), and static work postures (Monsef Kasmaei et al. 2016). Other risk factors for LBP include genetic factors, obesity, age, and ergonomics. However, gender is also a factor in this area. These various risk factors may contribute to the development of musculoskeletal disorders among security guards. Security job being a physically laborious occupation puts security guards at an increased risk for symptoms of musculoskeletal disorders such as osteoarthritis of the knee and hips, LBP, and symptoms in upper and lower limbs (Arslan et al. 2016). Guarding is not an organized sector and is prone to many uncertain conditions like weather changes (Cha et al. 2009) and ergonomic stress. Therefore it is important to reduce the occurrence of LBP by identifying the various preventive measures (Monsef Kasmaei et al. 2016). The purpose of this study is to determine the prevalence of LBP and the related disability associated with LBP among security guards (Vincent-Onabajo et al. 2016). We also intended to determine the individual occupational and psychosocial factors associated with LBP among security guards, and to assess the relative disabilities associated with LBP.

2. Methodology

This was a cross-sectional descriptive study that took place in Islamabad and Dera Ghazi Khan. It included security guards working in hospitals, clinics, banks, security offices, schools, and colleges. The study duration was six months (August 2017- January 2018). A total of 290 participants were included from each city through nonprobability convenience sampling. We included male and female security guards who were residents of Islamabad and Dera Ghazi Khan and aged between 20-60 years. Participants with inflammatory conditions, infectious diseases, non-occupational trauma,

Table 2: Low back Pain Functional Scale

Parameters	Unable to perform activity		Extreme Difficulty		Quite a bit Of Difficulty		Moderate Difficulty		A Little bit of Difficulty		No Difficulty	
	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
1: Any of your usual work, housework, or school activities	185	31.9	6	1	44	7.6	112	19.3	108	18.7	124	21.4
2: Your usual hobbies, recreational, or sporting activities	184	33.5	24	4.1	77	13.3	160	27.6	84	14.5	40	6.9
3: Performing heavy activities around your home	184	33.5	24	4.1	77	13.3	160	27.6	84	14.5	40	6.9
4: Bending	191	33	89	15.4	125	21.6	69	11.9	61	10.5	44	7.6
5: Putting on your shoes or socks	187	32.3	21	3.6	66	11.4	83	14.3	89	15.4	133	23
6: Lifting a box of groceries from the floor	188	32.4	46	7.9	112	19.3	141	24.4	68	11.7	24	4.1
7: Sleeping	186	32.1	7	1.2	15	2.6	31	5.4	92	15.9	248	42.8
8: Standing for 1 hour	187	32.1	10	1.7	44	7.6	111	19.2	132	22.8	95	16.4
9: Walking a mile	185	31.9	14	2.4	27	4.7	104	18.0	129	22.3	120	20.7
10: Going up or down 2 flights of stairs (about 20 stairs)	184	31.7	71	12.3	131	22.6	86	14.9	73	12.6	34	5.9
11: Sitting for 1 hour	184	31.7	13	2.2	39	6.7	93	16.1	117	20.2	133	23.0
12: Driving for 1 hour	187	32.3	10	1.7	28	4.8	73	12.6	109	18.8	172	29.7

spinal surgery and malignancies, neurological causes (poly-neuropathy) were excluded.

A questionnaire was made that was divided into three parts, i.e., A, B, C. Part A includes three questions related to the presence of pain. Part B has six questions in which we used two pain scales, the visual analog scale (VAS) and Wong-Baker faces pain rating scale. In part C, we used LBP functional scale that includes 12 questions. Every participant signed a consent form before collecting data to ensure that this study has no potential harm to collected data; codes were assigned to protect their identity and were not disclosed to anyone. The study was approved by the institutional review board and ethics committee (IRB&EC) of Shifa Tameer-e-Millat University Islamabad, Pakistan.

3. Results

Out of the total 580 participants, 290 were from Islamabad and 290 from Dera Ghazi Khan. These were categorized according to their age in 3 categories-15-30, 31-45, 46, and above (Table: 1). The prevalence of LBP was high in Islamabad (74.4%), where a total of 216 out of 290 participants had experienced LBP once in life while 73 participants stated that they never experienced LBP in their life. The prevalence in Dera Ghazi Khan was 65.5%, with a total of 190 out of 290 having experienced LBP once in their life. The remaining 100 participants never experienced LBP (Figure 1). Out of these 406 participants who had LBP, 88.7% believed that their LBP was due to job ergonomics. Of the 406 participants with LBP, 305 stated that their symptoms subsided by lying down as compared to sitting or standing, 303 participants experienced pain during standing, and 59 participants experienced pain during lying (Table 1, Figure 2).

Out of 406 participants, 272 felt pain within 2 hours, 204 had pain within 6 hours, 86 participants had pain within 8 hours, and 16 had pain started after 8 hours of work (Table 1).

Other body areas affected were also included in this study, and it indicated that 303 participants (52.2%) had knee pain, 82 participants (14.1%) had shoulder pain, 59 participants (10.1%) had foot symptoms, 10 participants (0.17%) had wrist pain, and 43 participants (0.74%) had neck pain along with LBP and 82 participants (14.2%) had pain in other body areas.

LBP functional scale results showed that out of 580, 229 participants had little difficulty in housework, hobbies, and recreational activities. 161 participants stated that they had LBP performing heavy activities around the home. 125 participants had problems during bending and stooping, and 141 participants stated that they had moderate difficulty during lifting. On the other hand, 248 participants had no difficulty sleeping, while the rest had little difficulty (Table 2).

Rating based on VAS for pain showed that 134 participants (23.3%) lie in the mild (1-3 Score on VAS) category. 142 participants (24.4%) lie in the moderate (4-6 Score on VAS) category, and 213 participants (36.7%) lie in the severe (7-10 Score on VAS) category. On the other hand, 91 participants (15.6%) experienced no pain at all (Table 1, Fig 4).

4. Discussion

The overall occurrence of LBP within the study was 70% which affected the quality of life of guards. According to the study, 70% of total participants had experienced LBP at least once in life, and 30% never experienced any LBP. Risk factors that contribute to the occurrence of LBP are age, physical activity, and static work posture. Other work-related factors include prolonged standing/sitting and carrying a gun. This study's result shows that middle-aged (31-45 years) participants had experienced more LBP as compared to the other two groups (15-30, 46-60/above). Other body areas affected were also included in this study, and it was found that 52.2% had knee pain, 14.1% had shoulder pain,

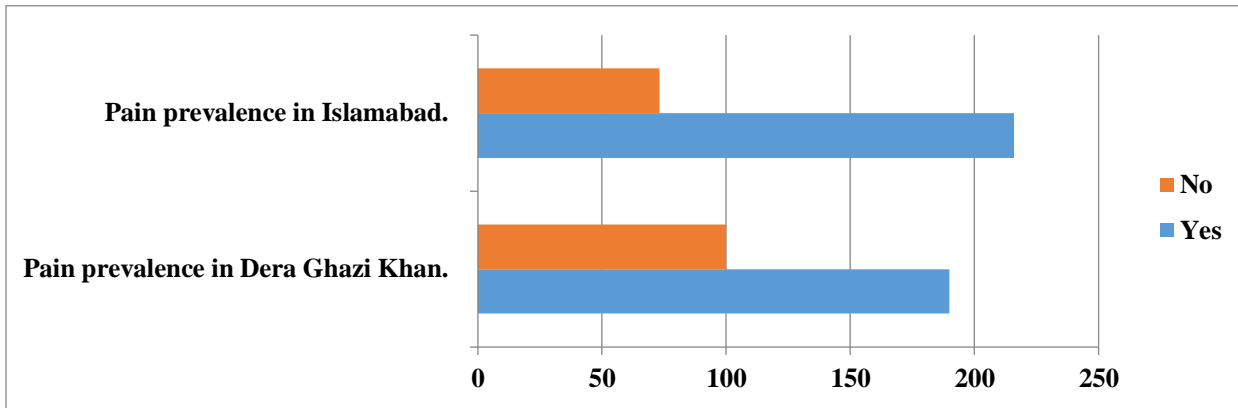


Figure 1: Frequency of LBP in both cities.

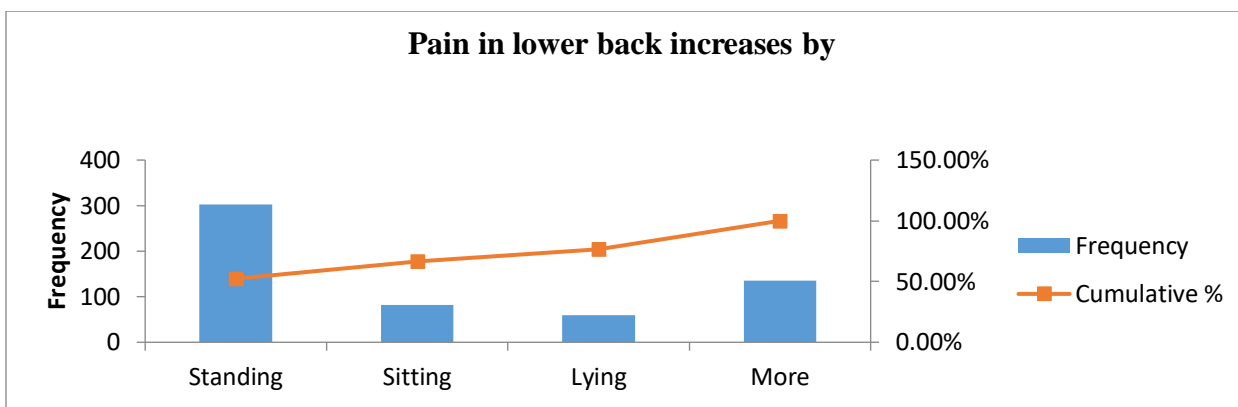


Figure 2: Increased pain in the lower back.

10.1% had foot symptoms, 0.17% had wrist pain, and 0.74% had neck pain along with LBP, and 14.2% had pain in other body areas. It is considered a leading cause of disability in developed nations. Moreover, it reduces quality of life and impacts the national economy. In comparison with other studies, limitations were found due to variations in the orientation period and selection of subjects. The overall studies in South Asia, with other alternative studies in different parts of the world, provide a framework for the outcome of this study.

A previous study by Monsef Kasmaei, Ziabari (Monsef Kasmaei et al. 2016) investigated the prevalence of LBP at 70.3% among nurses of Poursina, Iran. In the current study, the overall prevalence of LBP is 70% which can strongly be related. According to a previous study by Arslan, Syed Asadullah, et al. the point and

lifetime prevalence of LBP were 29.20% and 69.20%, respectively. The prevalence of this study is also significant in accordance with the results of a study by Sikiru, L., and S. Hanifa (Sikiru and Hanifa 2010), in which the 12-month LBP prevalence was 73.53%. The prevalence was also high, i.e., 73%-76%, in a study conducted by Maul et al. (Maul et al. 2003).

This study is consistent with a previous study by Udom, Janwantanakul et al. on the prevalence of LBP and its associated factors in Thai rubber farmers (Udom, Janwantanakul, and Kanlayanaphotporn 2016) in which the LBP point and annual prevalence was 33% and 55.7%, respectively. Prolonged sitting and standing were also found to be associated with the prevalence of LBP. According to Omokhodion and Sanya (Omokhodion and Sanya 2003), LBP prevalence

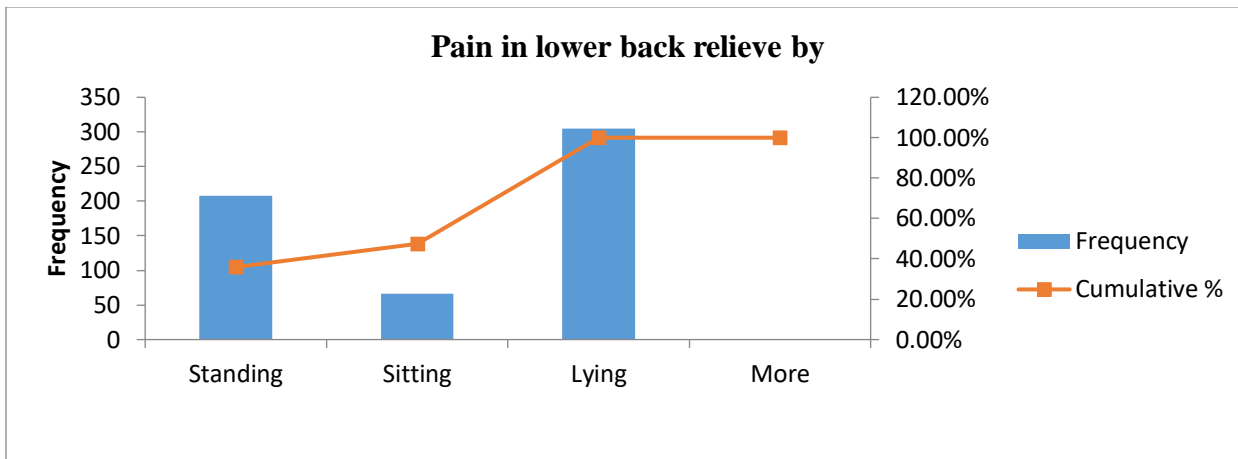


Figure 3: Relieved pain in the lower back.

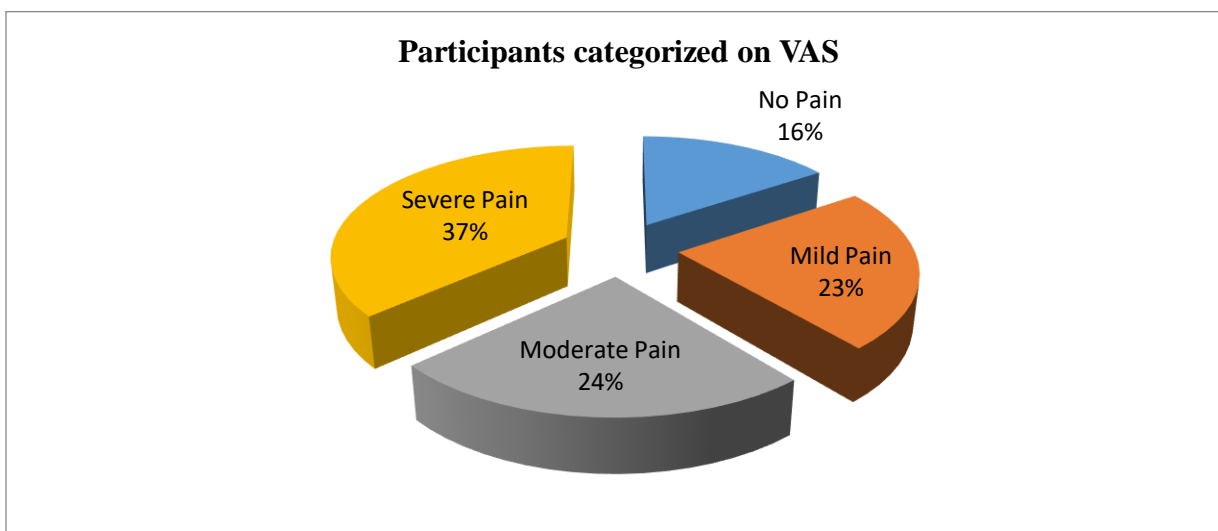


Figure 4: Pain in Visual analogue Scale.

increased due to long sitting duration, which is the second most prevalent factor responsible for an increase in LBP after standing in this study. Another study on villagers in Xihang found a prevalence of LBP of 34.1% and a 12-month prevalence of 41.9% (Punnett et al. 2005). Advancing age, and insufficient access to health services were the main factors that led to LBP. In this study, every 7 out of 10 guards have reported LBP.

The difference between the studies mentioned above and the current investigation may be due to a huge difference in the occupational factors,

different perceptions of pain in different scenarios, and prevalence rate of LBP in different time periods and settings (Ramezani, Nikbakht, and Mohammadpour 2006, Bejia et al. 2005, Maul et al. 2003). In other studies, a literature review concerning LBP shows that psychosocial factors and ergonomics affect the quality of life of guards. Many researchers believe that the prevalence of LBP is only associated with heavy physical work. It is not only about physical activity, but psychosocial factors and job environment are associated with it (Ramezani, Nikbakht, and Mohammadpour 2006). Studies

have suggested that ergonomics and prolonged standing in guards seem to play a definitive role in LBP in security guards.

There are some limitations to our study. One is related to concerns about privacy because some participants and organizations refused to give out their personal information. It is recommended that the working environment for security guards should have all the necessary pieces of equipment that are ergonomically fit for them. Moreover, their working hours should be reduced. These measures can prove to be beneficial in reducing the high prevalence of LBP in security guards.

5. Conclusions

This study shows that the frequency of LBP among the security guards of Islamabad is similar to those working in Dera Ghazi Khan. The prevalence in Islamabad was 74.4%, and in Dera ghazi khan was 65.5%. Ergonomics and prolonged standing seemed to be the predominant risk factors.

Conflict of interest

The authors declare that they have no conflicts of interest to disclose.

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Study Approval

Institutional review board and ethics committee of the Shifa Tameer-Millat University approved this study.

Consent Forms

Each participant signed a consent form. These forms are available with the authors.

Authors Contributions

SJ conceptualized the study and wrote the initial manuscript, MK helped with the literature search analysis and writing the first draft, SJ, and

MK did the data collection and review of the studies, and MM supervised the whole project and wrote the final manuscript.

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