



PREVALENCE OF LOW BACK PAIN IN ARMED FORCES

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ABSTRACT **OBJECTIVE:** To estimate the incidence and risk factors for developing low back ache in active duty military population considering age, sex, rank, and duration of military service.

METHODS: A cross-sectional data was collected and compiled which included all the admissions at various service hospitals in the last seven years (2012 to 2018). The data base of all the armed forces hospital admissions was compiled to estimate the prevalence of low backache and evaluate possible causative factors of low backache in armed forces.

RESULTS: There were total of 35560 armed forces personnel admissions in service hospitals from 2012 to 2018. The prevalence of low backache was higher in the infantry followed by artillery and then the supporting arms. The most prevalent age group was from 25 -35 years with 10 -15 years of service.

CONCLUSIONS: The relatively high incidence of low backache among general duty soldiers were related to age of the personnel, the trade (occupation), the duration of service. General duty soldier is working under extreme psychological stress, harsh terrain, often without adequate rest and With a constant threat to life. The poor back posture, improper use and lack of spine care exacerbates the back ache. The vigorous stress and strain of military activities like assault course, lifting heavy weights and frequent night training also contributes to the low backache.

KEYWORDS : Prevalence, Low Backache, Harsh Terrain, Psychological Stress, Spine Care

INTRODUCTION

Backache is the most frequent complaint causing patients to visit the clinics. Various studies have shown 70% to 80% of the population has an episode of low back pain during their active stay¹⁻⁴. Low back pain corresponds to over 50% of all musculoskeletal dysfunctions that cause chronic disabilities in industrialized countries, leading to expenses with treatments and absenteeism from work⁵⁻⁸. Every year in USA alone, 3-4% of the population is temporarily disabled, and 1% of the working-age population is disabled totally and permanently because of low back pain^{3,9}.

The occurrence of low back pain among the general population increases with age and starts declining after 65 years of age, but its occurrence among younger individuals is not uncommon, although studies of specific populations have not shown any correlation between age and low back pain¹⁷.

Military service begins with a basic training period, the content of which is basically the same for all conscripts. The special characteristics of military training include both the intensity and duration, since one of the main goals of the training is to improve conscripts physical performance levels, the volume of physical activity increases linearly during conscription.

The aim of this study is to investigate the prevalence of Low backache among soldiers and evaluate the possible causative factors in military training. The results may provide an insight into changes needed in military training that will reduce the occurrence of low back ache among the soldiers of armed forces.

Low back pain or lumbar pain runs between the lower ribs and the glutei. It can either be a midline pain, paraspinal or may present with neurological signs and symptoms. The low backache may be due to inflammatory and infectious diseases, systemic bone alterations, congenital abnormalities, degenerative, visceral, and psychogenic diseases, traumatic, and the most common mechanical. Most patients experience pain primarily in the lower back. The pain may radiate to the buttocks, thighs or knees. Patient may also experience spasms with mechanical back pain¹⁰.

The symptoms of low/mechanical back pain are generally more noticeable with flexion of the back and when lifting heavy objects¹⁰⁻¹⁴.

In the vast majority of cases no striking or serious cause is ever identified. Usually the pain resolves on its own within a few weeks.

Occupational low back pain is usually related to a mechanical cause. The onset of this pain is due to specific occupational activity and therefore is related to certain working situations such as maintenance of the same posture for prolonged periods, repetitive movements, lifting of heavy objects, and tilting and torsion of the trunk¹⁵⁻²⁰. The association of factors such as age, weight, height, BMI, smoking, and alcohol consumption with low back pain has produced controversial results as reported in the literature²⁰⁻²⁵.

Studies conducted in nonmilitary cohorts have found that psychosocial factors at work might contribute to the occurrence of LBP, but the evidence is still incomplete⁹. High rates of psychiatric comorbidity found in veterans and service members with persistent back pain suggest a related etiology⁹ but there is no other research investigating the effect of psychosocial factors on low backache among deployed soldiers.

In army, soldiers are trained for a specialized job and therefore they have to follow same routine for a longer time. Therefore they are more prone to develop low backache due to postural monotony. Moreover, harsh field training itself exposes the soldiers to certain risk factors.

In Indian armed forces no such study has ever been conducted. We conducted this study to investigate the occupational causes of low back pain in serving soldiers and associated factors related to the presence of low back pain.

METHODS

A total of 25542 military service personnel (study population) were involved in this study. The data was compiled and analysed. The age, gender, and military rank data for the total study population could be obtained. The data base of all the armed forces hospital admissions was compiled. Patients referred from the OPD and transferred from the field hospitals with diagnosis of low back ache were admitted in military hospitals. Lowbackache hospitalisation was defined in the ICD by codes M51 (lumbar and other intervertebral disc disorders with radiculopathy, vertebral with neurogenic pain), M54 (Lumbago with sciatica), M54.5 (low back pain, vertebral pain). For analysis, the diagnoses were further categorised into vertebral pain, neurogenic pain and the combination of both.

DATAANALYSIS

Data analysis was computer based. Mean \pm standard deviation was calculated for age of patients. Frequencies and percentages were calculated for all other qualitative variables.

INCLUSION CRITERIA

Serving armed forces personnel with history of low backache

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Age of the personnel, the trade (occupation) and the duration of service.

EXCLUSION CRITERIA

- Patients with a history of inflammatory/infective or congenital causes of backache
- Coexisting morbidities.
- Old spinal/pelvis fractures

RESULTS

The data which was collected has been compiled in Tables 1 to 5 as below.

Table 1. Year wise distribution of the patients.

Year	No of admissions in service hospitals(n=35560)
2012	4513
2013	4645
2014	5053
2015	6017
2016	5314
2017	5184
2018	4834

Table 2. Demographic Characteristics of the Study Group.

Characteristics	Study population (n = 35560)
Age Group (Years)	
< 25	5334(15%)
25 - 29	1778(05%)
30 - 39	24892 (70%)
> 39	3556 (10%)
Years of service(Years)	
< 05	1067(3%)
05 - 10	3556 (10%)
10-15	28448 (80%)
> 15	2489 (07%)

Table 3. Breakdown of patients as per the type of pain.

Characteristic of pain	Percentage(n=35560)
Vertebral pain	27737(78%)
Vertebral pain& radicular pain	6401 (18%)
Radicular pain	1422 (04%)

Table 4. Breakdown of patients as per the nature of duties.

S no.	Occupation	No.	Percentage (%)
1	General duty sepoy	32715	92
2	Drivers	1778	05
3	Signalman	711	02
4	Cook	213	0.6
5	Clerk	143	0.4

Table 5. Breakdown of patients as per arms and services.

Arms and services	Percentage(n=35560)
Infantry	28946 (81.4%)
Artillery	4125 (11.6%)
Services(ASC, Eng, Sig)	2489 (07.0%)

DISCUSSION

The yearly admissions have been shown in Table 1. The most common age was 30-39 years and most of the patients were in the 10-15 years service category (Table 2) . The most common type of pain was vertebral (Table 3) .

Our study reveals that the frequency of low backache was more in general duty soldiers (table 4) with frequently twisting and bending their torsos, besides being subjected to the continuous stresses of military lifestyle. It was also found the low backache was also prevalent in the personnel doing sedentary jobs like clerks, drivers and signal men, as they spend much of their time in the seated position.²¹⁻²⁵

Our study also showed the occurrence of backache even in non combat arms such as service/supply and repair/ maintenance(table 5) ⁶. These occupations often require driving vehicles or continuous heavy lifting of supplies. The personnel are at risk of workplace accidents and prone to remain in awkward positions for extended periods wearing heavy loads which are risk factors for backache.

It was also seen that Soldiers had a routine of prolonged working hours (average 10.8 hours per day) in difficult terrain and a short sleep span

of less than 06 hours.

A very recent prospective cohort study of demographic and physical risk factors for new-onset low backache among deployed forces identified the following risk factors for low backache as age, wearing bullet proof jacket , the time spent on walking patrol, and the weight of equipment worn⁸

In other studies it was found that the tendency of low backache was much more prevalent in patients who had increased BMI. The study done by Han²⁶ shows that increased BMI was associated with low backache. In accordance with various studies it was shown that factors like cigarette smoking, uncongenial environment, hard terrain, improper working conditions were related to the presence of low back pain²⁵⁻²⁶.

The sleep pattern and bedding seems to affect the posture and hence plays an important role in causing low backache. The soldiers sleeping on a traditional nawar/tape bed, which is not straight and causes midline depression that causes a poor posture with flexion of spine.

The soldiers have to be made understand about the proper posture that has to be maintained and the care of lower back during routine normal activity and encourage the use of mattresses as compare to traditional niwar beds. They also have to be educated about the dietary habits and weight control.

The main aim of the study was to look for the occupational causes of low backache in the armed forces. The study was done on a specific population of soldiers presenting with mechanical backache. The results of this study cannot be applied on a general population because soldiers are a separate entity with specialized occupation and they cannot be compared with the overall population. Therefore it is recommended that a multicentre study on same topic with a larger number of patients including non military personnel may be done to further explore the occupational stresses for a better management.

CONCLUSION

The vigorous training and the stress and strain of the army life style is the main cause of low back ache which is followed by the poor posture of sedentary soldiers was the main cause of low backache. Their ignorance of "Back Discipline" compounded and protracted the problem. Postural adjustment definitely requires ergonomic modifications/adjustments with respect to their occupation to avoid low backache. More studies are required to ascertain the biomechanics of low backache due to these occupational causes and specific guidelines should be formulated for its prevention and treatment.

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