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Health Impact Assessment of Different Workers in Central and North Kashmir

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Abstract: Health impact assessment of the different types of workers showed the prevalence of musculoskeletal, respiratory, gastrointestinal, ophthalmic, ENT and dermal symptoms with varying degrees of prevalence. The overall prevalence of musculoskeletal complaints particularly in the lower/upper back, leg pain, arm pain, knee pain, neck pain and headache was relatively higher compared to the rest of the occupational symptoms. Prevalence of lower/upper back problem was found higher among drivers followed by tailors, blacksmiths, carpenters and weavers due to awkward working postures and long hours of working. The prevalence of respiratory and ENT disorders was higher among blacksmiths, ophthalmic problems among weavers and tailors and dermal disorder among carpenters. Comparative analysis of the tailor health status across gender and work place showed that the symptoms were more prevalent in the shop based female tailors compared to the home based female tailors while as in case of males the symptoms were more prevalent in home-based tailors compared to the shop-based ones.
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INTRODUCTION:

Occupational health is the promotion and maintenance of highest degree of physical, mental and social well being among workers in all occupations by preventing departures from health, controlling risks and the adaptations of work to people and people to work (WHO, 1950). Occupational safety and health (OSH) commonly referred to as occupational health and safety (OHS), Occupational health or workplace health and safety (WHS) is a multidisciplinary field concerned with the safety, health and welfare of people at work. OSH also protects co-workers, family members, employers, customers and many others who might be affected by the workplace environment and has a strong focus on primary prevention of hazards. The goals of occupational safety and health programs include fostering a safe and healthy work environment.

Any person who chooses any of the skills as a full time occupation is related to the same in a number of ways and being employed is associated with the worker health, although this depends on a person's type of work and the working conditions the worker is exposed (Clougherty, 2010; VanRijn, et al., 2014). Working conditions refer to the exposures and risks an individual experiences at the workplace including physical, chemical, and biological hazards and sleep deprivation and these working conditions are related to different occupational hazards. In order to maintain the worker health we need to assess the health impacts in any occupation. Over the last few decades, planners and decision-makers have worked with public health professionals to use health impact assessment (HIA) as a tool to evaluate the potential health risks (Dannenberg, 2008). HIA can be undertaken at local, regional, national, and international levels to guide decision-making. The World Health Organization supports the use of HIAs as part of a Health in All Policies approach to incorporating health considerations into decision-making. Although there is no universal standard for HIA methodology, there is a general consensus that HIAs should follow six core stages like screening, scoping, assessing, developing recommendations, reporting, monitoring and evaluating (Schuchter et al., 2014). Although some work has been done in the field of HIA's, little is known about the range of employment-related health issues. It is in the backdrop of paucity of literature in particular in this Himalayan region that the current study (first of its kind) was taken up to generated some baseline data and start the thread of the work in this direction by describing the range of health issues faced by the people in different occupations like tailoring, driving, and weaving etc.

METHODOLOGY

Kashmir is a hub of many skills and the skilled people are related to many occupations like paper mashie, carpentry, masonry, driving, weaving, and tailoring etc. Their occupations are somehow directly related to the health status of the workers who chose these skills at

their regular and full time occupations. In the current study we have chosen five different workers groups including tailors, blacksmiths, drivers, carpenters and weavers to assess their health impacts on the workers in two Central Kashmir districts (Budgam and Srinagar) and one North Kashmir district (Baramulla).

Instrument for Data Collection and study population

A structured questionnaire framed by modifying questionnaires from various sources (Weel and Fortuin, 1998; Muthuviknesh and Kumar, 2014; Susitaival et al., 2003) consisting of 50 items was administered to 100 respondents of different workers groups including tailors, blacksmiths, drivers, carpenters and weavers. The questionnaire comprised of seven sections (A to G) on socio demographic data, posture and movement, respiratory problems, treatment and life style, physical strains, factors at work place, safety and management services. In this study, 20 workers of each occupation were interviewed to collect data regarding their occupational health status.

Data Analysis

Data generated was collected and analyzed using statistical packages for social sciences (SPSS version 20.0) and results calculated in percentages.

RESULTS

In order to assess the health impacts of different workers (95% males and 5% females) belonging to five different working groups including 20 each of driving, tailoring, carpentry, black smithy and weaving were surveyed using a detailed health survey questionnaire. Tailoring was the only occupation in which females were also working with a percentage of 25%. The surveyed workers belonged to different age groups with 13 blacksmiths, 17 drivers, 19 carpenters and all the 20 weavers belonging to the 15-44 years age group with rest of worker in the age of 45-64 years. Further it was a mix of married and unmarried workers working in the different occupations. Educational status of the workers showed that none of the workers was educated upto graduate level while a least number of them was educated upto higher secondary standard. Most of the workers were illiterates or educated either up to primary standard or the secondary standard (Table 1).

The surveyed workers showed the presence some musculoskeletal (included lower and upper backache, pain in legs, arms, neck, and knees), respiratory, gastrointestinal, ophthalmic, ENT and dermal symptoms with varying degrees (Table 2). The musculoskeletal symptoms observed in the worker population showed that the lower and upper backache was a prevalent symptom in 75-100% workers, while leg pain was prevalent in 15% workers only. In tailors' lower backache, upper backache and pain in arms was the most prevalent musculoskeletal symptom with more than 75% prevalence. However pain in legs was the least prevalent symptom with only 15% of them suffering from this symptom. In blacksmiths similar to weavers the highest prevalent symptoms again were the lower backache, upper backache and arm pain but with prevalence percentage of 85-95% while the rest of the symptoms occurred with a percentage of 0-45%. But exceptionally among drivers and carpenters the lower backache and upper backache occurred with a highest prevalence percentage of 100% in drivers and 90% in carpenters. However, the rest of the symptoms occurred with a lower percentage of 20-65% in drivers and 20-70% in carpenters. The respiratory and gastrointestinal symptoms including chest pain, breathlessness, cough and cold, burning epigastric pain, pain in abdomen, constipation, loose motion, bleeding per rectum, burning micturation and giddiness observed in the worker population (Table 3) showed the cough and cold as the most prevalent disease symptom (60-75%) in the workers while as the chest pain was prevalent only in the blacksmiths and the carpenters (70-75%). Breathlessness was the most prevalent respiratory symptom with a prevalence of 90% in blacksmiths. Talking about the gastrointestinal symptoms in different workers, it was the epigastric pain that was prevalent in 20-60% workers. However, loose motion, burning micturation and giddiness was the least prevalent (5%- 35%) symptom of suffering in the workers. Ophthalmic symptoms including diminution of vision and redness in eyes observed in the workers population (Table 4) showed that the diminutions of vision (40-90%) and redness in eyes (20-90%) was the most prevalent symptoms in the workers. The diminutions of vision had the highest prevalence among weavers (90%) followed by blacksmiths (80%), tailors, drivers (60%) and least prevalence in carpenters (40%). However, redness in eyes had highest prevalence (90%) in tailors, (70%) in weavers while as it was found least prevalent (20%) in blacksmiths. The ENT symptoms including decreased hearing, ear pain and discharge observed in the workers (Table 4) showed that the decreased hearing as the most prevalent symptom (10-80%) while ear pain as the least prevalent (5-15%) symptom. The symptoms of decreased hearing and ear discharge were highest prevalent (25-80%) in blacksmiths. Among the dermal symptoms itching of hands and feet was the most prevalent symptom (20-60%) while as the rest of the symptoms were having a prevalence percentage of 5-20%. Itching in feet and hands was frequently seen carpenters with a prevalence percentage of 60% followed by drivers (40%) and blacksmiths (20%).

As drug addiction can sometimes put a worker to additional health risks, we tried to analyse the addiction

behavior of the workers to various drugs and other agents like cigarettes, Bidis, tobacco and Gutka chewing and alcohol. From the results it was observed that none of the workers was addicted to alcohol while as a least number of workers (2) were addicted to gutka chewing. Cigarette and bidi smoking was the most prevalent addictive variable in the worker's as 100% drivers, 90% carpenters and blacksmith, 50% tailors and 30% weavers were smokers (Table 5). Talking about the association of symptoms among the subjects with years of service in the respective occupation (Table 6) it is observed that the subjects with more than 30 years of job experience had lower and upper backache problems with 100% prevalence percentage. Trying to find out the variation of musculoskeletal discomfort across genders and across work places (home-based and shop-based) among tailors, it was observed that there was a significant difference in the statistical figures across the observational lines. The different symptoms were more prevalent in the shop-based female tailors compared to the home-based female tailors while in male tailors the symptoms were more prevalent in home-based one compared to shop-based ones. However, overall the symptoms were more prevalent in shop-based tailors compared to the home-based tailors (Tables 7 & 8).

Discussion

Based on the data generated by the study it is reasonable to conclude that the most of the tailors were suffering from musculoskeletal disorders with lower/upper backache being most common followed by pain in arms and the same can be attributed to the prolonged awkward bending posture, which increases the risk of back and knee problems and the same was observed by Ghosh and Gangopadhyay (2005). In a another study conducted by Bhatia (1987) among Zari workers backache (87.7%) was the main complaint followed by lacrimation (34%) and headache (31.9%) and the same was again attributed to the reasons cited above, thus confirming our results. The findings about the higher prevalence of work related musculoskeletal diseases, upper back (95%) and lower back (85%) among blacksmiths followed by pain in arms (85%) coincides with the study conducted on skilled and unskilled blacksmiths in India by Gosh, (2011). Higher prevalence of these symptoms among blacksmiths may be due to their constant engagement in highly repetitive hand vigorous and intensive jobs for long time and for several years. Their frequent pain in the indicated body parts can also be attributed to their repetitive hammering work as proved by Ghosh (2011) in his study on blacksmiths.

Higher prevalence of work related musculoskeletal diseases among drivers with lower backache accounting for a maximum of 100% cases equaled by upper backache (100%) cases followed by pain in arms cases was in consonance with the results of Krause et al. (1998), although they didn't report any weight, back pain and neck pain. Another study (Kelsey, 1982) supporting our study where we found links between musculoskeletal diseases and other related factors such as working duration, showed a significant relationship between weight and back pain. The higher prevalence of discomfort in lower/upper back among drivers along with discomforts in forearm, wrist, hands and fingers may be attributed to their wrong postures, continued vibrations and entire work burden as they don't exercise regularly. The highest prevalent work related musculoskeletal symptoms in the construction workers (including tile fixators, masons and carpenters) was quite consistent with results of other studies that showed lower back problem as the most common musculoskeletal complaint among construction workers (Holmström and Engholm, 2003) and the same may be due to awkward working postures, manual material handling and long hours of standing work, which were common at almost all work stations and job activities observed. According to some previous findings (Rosecrance et al. 1996) working in static positions and awkward postures were the most frequently reported job activities thought to contribute to the occurrence of musculoskeletal symptoms in construction workers. Arm and shoulder pain the second highest prevelant symptom in the workers in the present study was in consonance with the study of Lemaster et al (2006) as the brick layer work in sustained and awkward postures for almost a whole working day and long duration with the hands above shoulder level, according to the findings by Holmström and Engholm, (2003) is a clear cause and effect relationship with neck and shoulder discomfort.

Respiratory and dermal symptoms like cough and cold, chest pain, breathlessness, itching in hands and feet that has a higher prevalence among carpenters might be due to the arousal of quantum of dust particles and its subsequent inhalation. It coincides with the study of Mandryk et al. (1999) showing the construction activities responsible for the arousal of a quantum of dust with their subsequent inhalation by the labourers resulting in cough, phlegm, breathlessness, and chronic bronchits.

Carpet weaving has a higher occupational risk of developing musculoskeletal disorder based on the features of their workstations as according to the results, the prevalence of musculoskeletal disorders were found higher in neck, arms, upper/lower back which correlates with the study of Alireza et. al. (2004) who again reported that prevalence rates of symptoms in the neck ,back, wrists, knees, thighs and legs were statistically higher among horizontal loom users. So, the musculoskeletal problems in the weavers can be

attributed to the awkward working postures such as considerable bending of neck and back complete folding of the knees, adapted by the weavers. Many studies have found positive association between deviant working postures and musculoskeletal signs and symptoms (Koker, 1993). Due of non-scheduled working time, weavers usually work continuously for a long time without rest, thus causes prolonged exposure to musculoskeletal disorder risk factors and an increased risk of other disorders.

Almost 70% of the workers with one or the other addiction, most commonly smoking followed by tobacco was mostly due to the feeling of pleasure as the main driving force for the same. However as per some of their blames, stress in their life or at workplace was also a reason for the addiction. The results are in is a clear consonance with a study done on workers of diamond cutting industry by Mehta and Parijat (2012) where most of the workers had a habit of tobacco chewing. Further the relation between the musculoskeletal troubles and the work duration can be due of the fact that workers are occupied for about 12 hours continuously in the same awkward sitting posture, burdened with strenuous work and over exertion. Supporting our work Davis and Kotowski, (2015) have also found that over exertion accounts for more than two thirds of the disorders of musculoskeletal system among industrial workers.

Conclusions

Based on the study on the health impact assessment of different workers its can be concluded that the prevalence of musculoskeletal, respiratory, gastrointestinal, ophthalmic and dermal disorders occur with varying degrees in the surveyed working occupations with the overall prevalence of musculoskeletal complaints particularly in the lower and upper back, pain in legs, arms, knees, neck, and headache. The prevalence of lower/upper backache was higher among drivers followed by tailors, blacksmiths, carpenters, and weavers. The symptoms were more prevalent in shop-based tailors compared to home-based tailors. Further continued and sustained studies on the occupational hazards are helpful in generating the required data for the managerial aspects of these occupational hazards.

Conflict of Interest

We declare that we don't have any conflict of interest.

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Table 1. Demographic profile of the workers studied

Variables		Tailor		Blacksmith		Driver		Carpenter		Weaver	
		No.	%age	No.	%age	No.	%age	No.	%age	No.	%age
SEX	Male	15	75%	20	100%	20	100%	20	100%	16	80%
	Female	05	25%	0	0	0	0	0	0	04	20%
Age (Years)	15 to 24	06	30%	03	15%	04	20%	05	25%	12	60%
	25 to 34	17	35%	13	25%	17	55%	19	40%	20	40%
	35 to 44	06	30%	05	25%	02	10%	06	30%	0	0%
	45 to 54	01	05%	07	15%	03	15%	01	05%	0	0%
	55 to 64	00	0%	04	20%	0	0%	0	0%	0	0%
Education Status	Illiterate	10	50%	14	70%	13	65%	10	50%	04	20%
	Primary	05	25%	02	10%	01	05%	05	25%	02	10%
	Secondary	03	15%	00	0%	05	25%	05	25%	14	70%
	Higher Secondary	02	10%	04	20%	01	05%	00	0%	00	0%
	Graduate	00	0%	00	0%	0	0%	00	0%	00	0%

Table 2. Prevalence percentage of musculoskeletal symptoms of the workers studied

Symptoms	Tailor		Blacksmith		Driver		Carpenter		Weaver	
	No	%age	No	%age	No	%age	No	%age	No	%age
Lower Backache	19	95%	17	85%	20	100%	18	90%	12	60%
Upper Backache	15	75%	19	95%	20	100%	18	90%	12	60%
Pain in Legs	03	15%	00	0%	00	0%	0	0%	0	0%
Pain in Arms	17	85%	17	85%	13	65%	14	70%	13	65%
Knee pain	13	65%	09	45%	04	20%	04	20%	04	20%
Neck Pain	11	55%	03	15%	04	20%	06	30%	15	75%
Headache	12	60%	08	40%	06	30%	04	20%	10	50%

Table 3. Respiratory and gastrointestinal symptoms of the workers studied

Symptoms	Tailor		Blacksmith		Driver		Carpenter		Weaver	
	No	%age	No	%age	No	%age	No	%age	No	%age
Chest pain	0	0%	15	75%	0	0%	14	70%	0	0%
Breathlessness	0	0%	18	90%	0	0%	02	10%	0	0%
Cough, Cold	12	60%	12	60%	12	60%	15	75%	0	0%
Burning Epigastic Pain	08	40%	08	40%	04	20%	06	30%	12	60%
Pain in Abdomen	0	0%	04	20%	06	30%	0	0%	0	0%
Constipation	09	45%	02	10%	08	40%	0	0%	0	0%
Loose Motion	0	0%	01	5%	07	35%	0	0%	0	0%
Bleeding Per rectum	1	5%	0	0%	0	0%	0	0%	0	0%
Burning Micturation (UTI)	0	0%	0	0%	1	5%	0	0%	0	0%
Giddiness	4	20%	02	10%	0	0%	5	25%	0	0%

Table 4. Ophthalmic ENT and dermal symptoms of the workers studied

Symptoms	Tailor		Blacksmith		Driver		Carpenter		Weaver	
	No	%age	No	%age	No	%age	No	%age	No	%age
Diminution of vision	12	60%	16	80%	12	60%	08	40%	18	90%
Redness in eye	18	90%	04	20%	08	40	10	50%	15	75%
Decreasing Hearing	02	10%	16	80%	5	25%	5	25%	0	0%
Discharge from ear	0	0%	5	25%	0	0%	1	5%	0	0%
Pain in the ear	1	5%	3	15%	1	5%	0	0%	0	0%
Itching in hands and feet	0	0%	4	20%	8	40%	12	60%	0	0%
Fungal infection	0	0%	0	0%	4	20%	4	20%	0	0%
Pyoderma	0	0%	0	0%	0	0%	0	0%	0	0%
Scabies	0	0%	0	0%	0	0%	2	10%	0	0%
Other skin problems	0	0%	1	5%	2	10%	3	15%	0	0%

Table 5. Prevalence of addiction among the workers

Variables	Tailor		Blacksmith		Driver		Carpenter		Weaver	
	No	%age	No	%age	No	%age	No	%age	No	%age
Smoke /cigarette/beedi	10	50%	18	90%	20	100%	18	90%	06	30%
Chewing tobacco	05	25%	07	35%	5	25%	08	40%	10	50%
Chewing Gutkha	02	10%	0	0%	0	0%	0	0%	0	0%
Alcohol	0	0%	0	0%	0	0%	0	0%	0	0%

Table 6.Association of symptoms among the subjects with years of service in present occupation

Symptom		<10yrs (n=38)	10-19 (n=30)	20-29 (n=25)	30-39 (n=05)	40-49 (n= 02)
Low backache	No	20	29	12	05	02
	%	53.8%	97.4%	48%	100%	100%
Upper backache	No	8	20	12	05	02
	%	22.6%	66.8%	48%	100%	100%
Pain in legs	No	06	15	12	05	05
	%	15.6%	51.4%	48%	100%	100%
Pain in arms	No	06	07	11	05	05
	%	15.9%	23.3%	44%	100%	100%
Other Musculoskeletal problems	No	01	01	01	0	0
	%	2.2%	5.8%	4%	0%	0%
Tingling numbness	No	05	11	13	05	05
	%	13.1%	39.0%	52%	100%	100%
Burning epigastric pain	No	12	14	13	05	05
	%	33.4%	49.3%	52%	100%	100%
Constipation	No	02	09	13	05	05
	%	6.7%	31.3%	52%	100%	100%
Bleeding per rectum	No	00	03	02	01	0
	%	0%	10.5%	8%	37.5%	0%

Table 7. Analyses of musculoskeletal discomfort among tailors in different places of work across gender

Body part	Home Based (8)				Shop Based			
	Male (5)		Female (3)		Male (10)		Female (2)	
	No	%age	No	%age	No	%age	No	%age
Neck	5	100%	2	66.66%	8	80%	2	100%
Shoulder	5	100%	3	100%	10	100%	2	100%
Upper back	5	100%	2	66.66%	8	80%	2	100%
Arm	5	100%	2	66.66%	4	40%	2	100%
Lower back	5	100%	3	100%	10	100%	2	100%
Thighs	3	80%	2	66.66%	5	50%	1	50%
Legs	3	80%	2	66.66%	5	50%	2	100%

Table 8. Analysis of musculoskeletal discomfort among tailors in different places of work

Level of comfort								
Body	Home Based				Shop Based			
	Severe	Moderate	Mild	No pain	Severe	Moderate	Mild	No pain
Neck	02	03	02	3	03	1	02	4
Shoulder	01	04	02	03	04	1	3	02
Upper back	01	03	03	03	03	01	01	05
Upper arms	01	02	03	04	03	01	02	04
Mid back	01	02	01	05	01	03	02	04
Lower arm	02	03	02	03	01	02	03	04
Lower back	01	05	02	02	04	02	01	03
Buttocks	01	03	02	04	03	01	01	05
Thighs	02	03	02	03	04	02	02	02
Legs	03	05	01	01	04	01	04	01

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