

Occupational-Related Musculoskeletal Disorders and Associated Factors among Beauty Salon Workers, Adama Town, South-Eastern Ethiopia, 2018

Sina Temsgen Tolera^{1*}, Sintayehu Kebede Kabeto²

¹Department of Environmental Health, College of Health and Medical Sciences, Haramaya University, Ethiopia; ²Department of Nursing and Environmental Health coordinator at Tula Health Bureau, South Nation, Ethiopia

ABSTRACT

Intoduction: Occupational-related Musculoskeletal Disorders (MSDs) often present significant health and costeffective loads on all the societies exposed any work type mostly in low income countries. Consequently, information pertaining to occupational related musculoskeletal disorders among Beauty Salon Workers (BSW) in our country; Ethiopia is unidentified. Therefore, the aim of this study was to determine the prevalence occupational-related musculoskeletal disorders in Adama town, Eastern Ethiopia.

Methods: A cross-sectional study was applied from April to May 2018. About 372 beauty salon workers recruited as sample using the systematic random sampling technique. Data were analyzed using statistical package for social sciences (SPSS_ Version 21). The significance of associations was evaluated at alpha 0.05 p-value with a confidence intervals (95%) and Adjusted Odds Ratios (AOR).

Results: The study revealed that the response rate was 98.92% (N=368). The prevalence of occupational related musculoskeletal in one year and in one week was 56% (n=205) [95% CI (51, 60)] and 33% (n=120), respectively. Age [AOR: 2.001; 95% CI (1.174, 4.346)], alcohol use [AOR: 2.28; 95% CI (1.38, 3.79)], absence of training regarding safety [AOR: 0.11; 95% CI (0.03, 0.27], working posture [AOR: 0.14; 95% CI (0.05, 0.22)], and duration of service [AOR: 1.65; 95% CI (1.11, 2.14] were statistically significantly associated determinants.

Conclusions: The study concluded that occupational related musculoskeletal disorder and disability were prevalent among Adama Town beauty salon workers which to be associated with alcoholism, absence of safety training and duration of service. Thus, the authors forward that workshop or seminar programs need to address these factors.

Keywords: Associated factors; Beauty salon; Musculoskeletal disorder; Occupational related

INTRODUCTION

Background

The beauty salon is one of the unwarranted professions or work place like any barber, which is characteristically, associated with several workstation risk factors [1]. The grouping of exposures to various occupational hazards [2,3]. Consequently, beauty salon workers are often very susceptible to the various adverse health out-comes, like occupational-related musculoskeletal disorders sometimes knows as pain [4]. In this work area, work characteristics, such as constrained body positions, repeated of movements, and energy concentration on small parts of the body, like the hand, wrist, pace of work that does not allow satisfactory recovery among movements, vibration, and temperature lead to the progresses of musculoskeletal disorders [5-7].

Occupational-related Musculoskeletal Disorder (MSDs) is one of the major concerns of public health resulting from the increasing demands of healthcare service utilization, momentary and everlasting disability, and impact quality of life it usually incurs [8]. Moreover, it is a contemporary with the job-related health problem, could reduce productivity, absenteeism from work, and rising reward premiums [9]. For instance, in United Kingdom, an estimated seven million working days were lost due to occupationalrelated musculoskeletal disorders, constituting twenty four percent of all days lost ill-health in 2017/18 (HSE, 2018) [10]. Of these, occupational-related disorders in terms of back and lower limb

*Correspondence to: Sina Temsgen Tolera, Department of Environmental Health, College of Health and Medical Sciences, Haramaya University, Ethiopia, Tel: +251913023634; E-mail: sinatem3@gmail.com

Received: November 11, 2019; Accepted: January 02, 2020; Published: January 09, 2020

Citation: Tolera ST, Kabeto SK (2020) Occupational-Related Musculoskeletal Disorders and Associated Factors among Beauty Salon Workers, Adama Town, South-Eastern Ethiopia, 2018. J Ergonomics 9:257. doi: 10.35248/2165-7556.20.9.257

Copyright: © 2020 Tolera ST, et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

accounted for more than three million days lost. The same study conducted in Turkey also showed that occupational related muscular skeleton account for thirty four percent of all work days lost due to occupation-diseases [8].

Beauty salon profession are also related with the dangerous nature of working environments, exposing workers to the threats of musculoskeletal disorders [11,12]. They often stand long more than eight hours and bend or twist their backs onward or sideways during their working activities that could be enhance back and lower limb disorders of the beauty salon workers [13,14]. Thus, some scholars concluded that the prevalence of occupational-related MSD among beauty salon workers is universal. For example, the recent studies revealed that prevalence was 76.3% studied in Nigeria; 27.4% in Turkey and about 39% of work-related musculoskeletal disorders prevalence was reported in Brazil [4,15,16]. Likewise, a study showed in Greece stated a 28% occurrence of knee pain [17]. Studies in Iran show 31% and 66.5% of the prevalence was associated with the leg related pain [14]. Moreover, other studies reported the prevalence of work/occupational-related MSD to be between 52.3 and 67.7% [18].

Several surveys disclosed that a figure of occupational factors determine the enlargements of back work related and lower limb work related disorders. In fact, sex, age, marital status, and experience are the determinant factors among sociodemographic characteristics of the workers Pelissier et al. clearly influence the contribution of back pain and lower limb musculoskeletal pain [19]. Moreover, worksites factors, including working duration or hours, occupation, type of activity either static or dynamic, shift work, training pertaining to safety, working position, rest breaks and psychosocial factors, such as job satisfaction and anxiety forecast the probability of sustaining back pain and lower extremity pain are common among musculoskeletal disorders [14,20-24]. Individual behavioral styles, like alcoholism Skillgate et al. body activities Kebede and Tafese and workers' Body Mass Index (BMI) Alshagga et al. and preceding history of systemic illnesses Tafese et al. were also reported as possible risk or impacts of back pain and lower limb pain of MSDs [25-28].

Now a day, in our country, Ethiopia, Micro and Small Scale Industries (MSSIs) including beauty salon industries, are vastly growing. The new developing field in Ethiopia which is known as Occupational Health and safety (OHS) protection, promotion and prevention of the workers in these sectors is, however, usually overlooked both in investigation and strategy or policy action [29]. Despite, the ever increasing human power in poor working sites that prompt them to many disorders, research about prevalence and factors associated with MSDs is rare or negligible. Therefore, the aim of the study was to explore the prevalence and job-related musculoskeletal disorders among beauty salon workers in Adama town, Eastern Ethiopia.

METHODS

Study area

This study was conducted in Adama town, East shawa Zone of Oromia State, Ethiopia. The town is one of the Oromia Regional state city found located at 8.54°N 39.27°E at an elevation of 1712 meters, 99 km southeast of Addis Ababa [30]. According to the 2018 world population projected review (2018), the town had 324,000 of a total population, from these, 160,184 whom were male and 163, 816 were women [31].

Study design and period

Beauty Salon based cross-sectional study was applied from April, 2018 to May 2018 to sought the prevalence and associated factors of MSDs among beauty salon workers in Adama town.

Source and study population

The source population were all beauty salon workers in Adama town, while female beauty salon workers in *kebeles* (It is a local name, meaning it is *sub district*) were our study population which were randomly selected.

Inclusion and exclusion criterial

Beauty salon workers who had worked for at least one year were included, whereas those who were on annual leave, maternity leave and those who had previous history of back pains, car or bus accidents, and car injuries were excluded.

Determination of sample size

There were beauty salon workers in twenty (20) kebeles and sample was calculated using Epi_data software with total population of 2850 female beauty salon workers (N) and 50% (P) hypothesized of outcome variable and absolute precision was 4% (Use: CI=95% at Z=1.96 critical value). Then, single proportion formula was applied: Implies;

$$N = \frac{z^2 pq}{d^2}, \text{ Therefore, sample size (n) become,}$$
$$n = \frac{(1.96)^2 (0.50) (1 - 0.50)}{(0.05)^2} = \frac{0.9604}{0.0025} = 384 \text{ respondents.}$$

But, the current total populations (i.e 2850) from two studies are less from than 10,000 populations, so we use correction formula as: $nf = \frac{ni}{1 + ni/N}$ where, nf=final sample $size = \frac{384}{1 + 384/2850} = \frac{384}{1.135} = 338$. Here, by assuming 10% of them were non-response rate, (nf)=372.

Then, multi-stage sampling technique will be used to select the study participant's. It was carried out a type of sampling which involves dividing the target population clustered into Districts then followed by *Kebeles* (It is local name meaning *Sub-district*). Then from each *kebele* the sample was selected randomly drawn from each clustered District. About 372 female beauty salon workers were selected for study purpose based on above sampling method.

Data collection and procedures

Data collection was used systematic random sampling; while administered interviewer using standard questionnaire was employed. The response of participants was evaluated using (Yes/No; i.e. self-reported) for prevalence of occupational related MSDs. The material was previously endorsed as suitable for interview data collection procedure [32]. The standardized questionnaire has been conducted in intensive studies in the literature, including Ethiopia [28, 33,34]. Job satisfaction of beauty salon worker was evaluated using a generic scale questionnaire [35]. Also perceived work anxiety using the new occupation stress scale was assessed [36]. Apparent severity and disability of circumstances were assessed according to pain severity classifying [37]. The standard questionnaire was comprised of four parts. 1st: Socio-demographic factors, such as sex, age, educational, marital status, salary, and experience. 2nd: Work-

place related factors, such as working hours, training, pre and post medical examinations, schedule and shift work, working position, and rest break. 3rd: Psychosocial factors, this includes previous individual history, satisfaction of job, and job stress. 4th: Individual behavioral style factors like physical exercise (responded as Yes or No), smoker (Yes or No) and handedness (either right or left).

Data quality control

The data quality of the participant was managed through their language they used at these working settings. Therefore, the developed questionnaire in English version was translated in to indigenous languages 'Amharic'and "Afan Oromo language" and back to English by language professionals to confirm constancy. Final, both Amharic language and Afan Oromo language version was desired to seven (#7) data collectors. These data collectors were health profession two public health, two Environmental health and three occupational health and safety professional workers were involved in data collection. In fact for best quality of data gathering these data collectors acquired important training and orientation by the Investigators. Then for these sites well experienced supervisors (#6) were recruited. In the same manner, supervisors took the orientation on issues relating to the clarity of the questions, objectives of the study, privacy of information, and their involvement (consent). For the validity and reliability, a pre-test was conducted on Wulinchit (Local small city, near to study area (Adama town). A few modifications, such as reducing the number of enquiries and modified some misunderstandings and uncertainties based on the conducted pretest. Finally, the data collector and supervisor were assigned at study area to continue their data collection. After assigned them, the principal investigator and co-investigator were supervised both data collectors and supervisors until end of data collection.

Data analysis

The data were cleaned for completeness, coded, and entered in to EPI-Data version 7.1 then exported to Software Package for Social Science (SPSS) version 20 was used for analysis and then "Frequency (F), Percent (%), Means (M), and Standard Deviations (SD)" were used to describe the outcomes. Here=Cronbach's (α =0.79) was used to test the reliability of questionnaire; Cronbach's (α =0.91) was used to examine for reliability of 10 items generic job satisfaction scale questionnaire; and (use: α =0.87) was used to check 22 item job stress scale questionnaire for reliability.

The associations between the independent variables such as sociodemographic (Part one) and dependent variable (Part two). To determine the association between these variables binary logistic regression analysis was used. Accordingly, explanatory variables with less than 0.2 p-value in a bivariate analysis, then exported to a multivariable logistic regression model to additional investigate the possible effects of confounders. In addition, a forward variable selection method was used to drag variables in to the multivariable logistic regression model. Furthermore, the goodness of fit model was checked and found to be good model fitness with 0.81 p-value (Hosmer and Lemeshow). The odds ratios with 95% Confidence Intervals (CI) were calculated to evaluate the strength and a cut off 0.05 p-value was established to ascertain the significance of associations.

Operational definition

Back pain and lower extremity disorders: These commonly defined as having had trouble (ache, pain and discomfort) in low back pain (small of the back), one or both hips or/and thighs, one or both knees, one or both ankles feet any time during the last one year [32].

Beauty salon: Sectors where female are decorating their hair either done by male or female, whereas *beauty salon workers* are those recruited in these sectors both contract and permanent

Musculoskeletal disorders (MSDs): MSDs are injuries or pain in the human musculoskeletal system, including the joints, ligaments, muscles, nerves, tendons, and structures that support limbs, neck and back.

Perceived severity and perceived disability: A perceived disability is pain disability point score of 3–6 points ideally whereas Pain intensity score of 50 or <3 disability points [37].

Stressed worker: This is the new job stress scale score above the overall mean score [36].

Job satisfied worker: It can defined as the generic job satisfaction scale score of 32 or above [35].

Study ethics and clearance

The author was communicated the letter to each owners of the beauty salon workers selected for inclusion. We also obtained verbal informed consent from each respondent. Confidentiality of data was maintained. Only aggregate data were used. Any involvement in the study was carried out with the full consent of the person willingly participating in the study.

RESULTS

Socio-demographic

The study shows 368 beauty salon workers were participated in our study which was 98.92% of response rate. Most of the participants were males (87%; N=320) of A high number (86%, N=316) of the respondents' age was less than 30 years ranging from seventeen to fifty with a Mean (M) and Standard Deviations (SD) was (M=26.4, SD= \pm 4.8) years. About 10.5% (N=39) of the participants said that they could not read and write, while, almost half of them (49.7%, N=183) attended secondary schools. More than half, (61%, N=223) of them were not married. A few in number (7%, N=26) of them had got less than 39.29 of United States dollar (USD) and more than half (58%, N=212) of them reported their monthly salary was 39.32–60.71 USD (Table 1).

Behavioral characteristics of BSW

Among the respondents, 36.0% (N=132) described that they didn't use alcohol. A total of participants, 42.0% (N=154) participants reported they were chat chewers, however 81.1% (N=299), 13% (N=48), and 6.0% (N=21) were didn't smoking, present smokers, and inactive smokers, respectively. Regarding physical exercises, 31.0% (N=112) reported they did physical exercise. About 10.0% (N=37) revealed that they had exercises for 1-2 hours per a day, 10.0% (N=35) for greater than 2 hours per a day, 7.0% (N=27) 1-3 times per a week, and 4.0% (N=15) every day. Thirty-one percent 31% (N=118) of the beauty salon workers pointed that out they had systemic illnesses. Out of the interviewees, 67.0% (N=245)

Table 1: Socio-demo	graphic chara	acteristics of bea	auty salon wor	kers Adama
Ethiopia, 2018.				

Variables	Respondents (n=368)					
	Frequency	Percentage (%)	P-value			
Sex						
Male	320	87				
Female	48	13.1	0.177			
Age						
Less than 30	316	85.8				
Greater than 30	52	14.2	0.001			
Marital						
Married	115	31.2				
Single	223	60.6				
Divorced	30	8.2	0.06			
Educational						
Those can't read	39	10.5				
1st -8: Primary	62	16.8				
9-12:Secondary	183	49.7				
Above secondary	85	23.1	0.178			
Monthly salary						
<39.21 USD	26	7				
39.32-60.71 USD	212	57.58				
>60.71USD	130	35.43	0.149			
Work service						
<5 years	264	71.79				
>5 years	104	28.21	0.008			

Keys: I United States Dollar (USD)=28 Ethiopian currency (ETB); N: Number

clarified they were dissatisfied with their jobs, whereas 24% (N=88) reported they perceived stress due to their work.

Work related characteristics of BSW

More than half percent i.e., 60.40% (N=220; p=0.26) of the beauty salon workers presented that the pattern of their service was temporary and permanent (this so called permanent is not similar to government permanent workers, the agreement was based on owner agreement. The majority of them 79% (N=29; p=0.08) employed under owner of beauty salon workers and the remaining were self-employed. Seventy-four percent (N=27; p=0.00) of the participants showed they worked greater than 8 hours per day. Only 7.90% (N=29; p=0.86) of the workers reported that they took safety training. The study revealed that about 2.10% (N=81), 25.20% (N=93), and 52.70% (N=194; p=0.012) their payment structure of the participants was per a month, hour, and per a piece, respectively. Among participants, forty-four percent (N=184; p=0.03) revealed that they didn't use rest break. The study shows that 7.50% (N=27), 25.60% (N=110), and 66.90% (N=246; p=0.26) of them spent one to five hours, six to ten hours and greater than ten hours standing per a day, respectively. The study also conveyed that 37.10% (N=136; p=0.02) of the participants indicated their working posture was awkward; bending and twisting, and the rest 41.70% (N=154) were static posture/frequent standing, and 21.20% (N=78) alternate/flexible postures.

Prevalence of musculoskeletal disorders

The study indicated that the prevalence of low back pain in the past one year and one week was 55.70% (N=205) [95% CI (51.00, 60.40)] and 32.60% (N=120), respectively. Pertaining to respondent gender, there was no statistically significant difference b/n male and female respondents (p=0.60). From one week, about 42.20% (n=87; p=0.00) of the respondents with back and lower extremity disorders indicated that they experienced the symptoms in more than a single body site of the respondents, 40.6% (n=83; p=0.00) directed their activities were limited because of the grievances. The lower body sites of respondents represented with the symptoms included thigh 31.24% (N=115); knee and leg 39.40% (N=145); and ankle and feet pains 25.60% (N=94). The study also shows about 45.6% (N=94) of the respondents with lower extremity pain confirmed that they experienced them in the last one year/12 months and 21.30% (n=44) were prevented from their activities due to the conditions around at working sites. Out of the total participants disorders of back pain and lower body sites, about 21.30% (n=44) of them reported the sought treatment services and 40.6% (n=83) of the revealed that they perceived high disability, while 38.10% (n=78) described their back pain and lower pain was severe.

Factors associated with MSDs of BSW

The association of dependent variables and independent variables was conducted by bivariate analysis. Based on this performance, age of respondents, working hours within a day, work experience, length of employment, nonexistence of health and safety training, alcohol consumption, working position, posture, educational status, satisfaction of job, individual illness, history and rest break were the factors substantially associated with occupational-related back pain and lower body pains. After controlling for confounders in a multi logistic regression analysis, age of respondents, length of service, alcohol use, nonexistence of safety training, and working position remained to considerably influence the developments of back pain and lower extremity pain. The study also revealed that participants aged greater than 30 years were 2.00 times more at risk for developing back and lower extremity disorders than those aged less than 30 years using [AOR: 2.00; 95% CI (1.17, 4.35)]. The odds of experiencing back and lower extremity disorders were 2.283 times more probable among alcohol users than nonusers [AOR: 2.28; 95% CI (1.38, 3.79)]. Moreover, 89% of the likelihood of developing back pain and lower extremity pain was prevented among participants who has been take safety and health training than those who didn't [AOR:0.11; 95% CI (0.03, 0.27)]. Beauty salon workers who had worked in flexible or alternative work position/postures were almost eight six percent (i.e. 85.80%) less likely to develop back pain and lower extremity pain than those who worked in static or frequent standing work position/postures [AOR: 0.14; 95% CI (0.05, 0.22)]. The study revealed that back disorder or pain and lower extremity pain were 1.65 times more potential to be experienced among salon workers with greater than 5 years of working service compared to those with less than 5 years (Table 2).

DISCUSSION

This study conducted based on cross-sectional design based a workplace to evaluate the prevalence of back pain and lower limb of musculoskeletal disorders and associated factors among beauty salon workers Adama town, Eastern Ethiopia. The prevalence of

Tolera ST, et al.

OPEN CACCESS Freely available online

Table 2: Associated factors with back and lower pains among Adama town B/salon Workers, 2018.

Variables	Back pain and lower pain (N=372)						
	Yes	No	Crude OR (CI=95%)	Adjusted OR (CI=95%)	P-value		
Age							
Less than 30 years	170	149		1			
Greater than 30 years	37	16	2.10 (1.48, 4.93)	2.001 (1.17,4.35)	0.00*		
Educational Status							
Who can't read and write	48	27	1.53 (0.97,2.54)	1.03 (0.16, 3.31)	0.1		
Who can read and write	160	138	1	1	1		
Work experience in year							
Less than 5 years	138	129	1				
Greater than 5 years	69	36	1.83 (1.42,3.43)	1.650 (1.11, 1.14)	0		
Working hours per a day							
Less than 8 hours	43	51	1	1			
Greater than 8 hours	164	114	1.70 (1.09,2.63)	1.35 (0.81, 2.23)	0.07		
Health and Safety							
No	181	161	0.50 (0.18,1.24)	0.11 (0.03, 0.27)	0		
yes	26	3	1	1			
Alcohol drinking							
No	114	124	1	1			
yes	93	41	2.47 (2.44, 5.97)	2.28 (1.38, 3.79)	0		
History of systemic							
No	135	118	1	1	1		
yes	72	47	1.34 (1.34, 3.15)	1.03 (0.16, 3.90)	0.18		
Working							
Bending, twisting	73	65	0.80 (0.54, 1.65)	0.126 (0.13, 1.13)	0.1		
Static/ frequent standing	88	67	0.95 (0.54, 1.65)	0.142 (0.05, 0.22)	0		
Alternative postures	46	33	1	1			
Rest break							
No	96	90	0.72 (0.51, 1.10)	1.04 (0.61, 1.75)	0.12		
yes	111	75	1	1			
Job satisfaction							
Who did satisfy	75	49	1	1			
Who didn't satisfy	133	115	0.76 (0.98, 2.24)	1.23 (0.70, 2.10)	0.14		
1 10 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1						

Keys: *Significant at p-value <0.2 for bivariate analysis; **Significant at p-value <0.05 in multivariate analysis; ETB=Ethiopian birr; N: Number; OR: Odd ratio; CI: Confidence interval; N: Number

low back pain in the previous one year or 12 months was 55.70% (N=239) [95% CI (51.00, 60.40)]. This finding was relatively similar to that of a study conducted in Greek (53%) [17]. The possible reason for this might be the correspondence of the working setting and circumstances of beauty salon workers occupations or professions across countries. Another probable suggestion might be the fact that, an informal working are often didn't include in the national industry code and act in many countries. The prohibition of these sectors in the national laws probably leads to poor access to Occupational Health and Safety (OHS) services and acts within the country where this study conducted, which further proliferates the circumstances. Nevertheless, our finding indicated higher prevalence of low back pain as compared to the studies in the United Kingdom/UK/ (4.9%) reported by Bradshaw et al. and Brazil (39%) revealed by Mussi and Gouveia [16,38]. On the other hand, study found that a lower magnitude of low back pain complaints compared to a study in Nigeria (76.30%) [15]. The difference might be due to the occupational health and safety service of workplace pertaining to occupational injuries promotion, prevention and protection; the variation also due to data collection methods and reporting procedures from these study settings.

The current result shows that the level of ankle pain and feet pain was almost one fourth i.e. 25.60% (N=110) [95 CI (21.40, 29.60)] and that of leg pain and knee pain was 39.40% (N=169) [95 CI (35.00, 44.30)], which is less that study reported from Iran country (70.7%) reported by [14]. The present study also described a higher magnitude (66.50%) of knees pain and legs pain was observed. Moreover, about 28.90% (N=124) [95 CI (24.70, 33.30)] of the participants in this study indicated they had experienced pain in their hip and thigh body sites. This result was higher than the case study reported from Nigeria (16.60%) [15]. The discrepancies could be due to differences in data collection methods, injury type and occupational illness remediation, and reporting procedures among the study sites.

Furthermore, the result of the multi_ regression analysis

demonstrated that age of the respondents contributed to the development of occupational or work related disorders. This outcome is contracted with the results of other studies Rezaeian et al. and Emmanuel et al. [14,39]. The probable explanation for these similarities is that, the biological and functional structures of the human body, particularly those related to supportive sprain and strain effects in terms of muscles, nerves, ligaments, joints, and tendons would tend to degenerate as age growths. This could be probable to influence the structural functional capacities of the beauty salon workers. Similar explanations have been provided by previous studies [40,41]. The other possible reason could be the effect of a cumulative effect of job-load on the muscular skeletal through working experience per employment services within the beautiful salon. The 3rd reason could be improvements in modern human lifestyles that would be likely to increase workers' chance of extended stay in the employment settings, resulting in the current domination of working workplaces for aging workers.

The current study furtherly identified that work experience is an important determinant of work related disorders such as back pains and lower extremity disorders. This result was supported by other studies [17,39]. The possible explanation might be the fact that employees with relatively longer duration of employment are often victims of the effects of cumulative exposure to work related hazards. Another possible reason might be that workers with longer duration of employment might carelessness the possible protection mechanisms of potential health and safety risk factors at their workplace, relying on the length of employment adaptation as a means of protection from adverse effects.

Moreover, alcohol consumption was found to be the other significant factor disorder like of back and lower extremity complaints. This result correlate with previous studies [16,25]. The plausible reason may be that alcohol drinking is one of the common health risk behaviors that might deteriorate the normal functional capacities and defense mechanisms of the body. A more possible explanation is that alcohol drinking might negatively influence the behavior of people, often prohibiting from exercising a healthy life-style, such as physical exercise.

The absence of training regarding to health and safety was also the other substantial factor for back and lower extremity conditions. The proximal association between safety training and LBP has rarely been studied. Workers' health and safety awareness and training could however, play a great role in hazard and risk prevention and control measures. A study in Ethiopia was concurred with this result [14]. Safety training is more likely to promote workplace cultures of safety. Training targeting healthy life-styles might also result in behavioral changes of employees leading them to enjoy physical exercises, which could in turn lead to a reduced probability of back pain disorders.

The multivariate analysis regression also revealed that working position or posture considerably contributed to the risk of developing back pain and lower extremity pains. This finding was consistent with those of other studies [15,19,23]. It could be explained that awkward postures, such as bending, twisting and static postures such as prolonged standing, might impose anxiety on specific body parts by employing pressure on locomotive body leading to physical damages and functional impairments. A static and inflexible nature of working position for an extended time might also develops muscle stiffness. The distinguishing nature of the current study is that it initiated the exploration of occupationalrelated prevalence and associated factors leading to back pain and

OPEN OACCESS Freely available online

lower extremity pain that usually experienced by people engaged in these Micro and Small Scale Industry (MSSIs) in Ethiopia. The occupational or work-associated factors contributing to the conditions were pretend the government and other stakeholders could benefit from it and also such type of the result significant for policy design and in implementations of occupational health and safety service.

LIMITATION OF THE STUDY

Self-report data collection methods and techniques working in this study might be a restraint, as recall prejudice and under reporting could be anticipated. The temporal association or relationship b/n occupational-related symptoms of pain or disorders and the hair dressing-work related factors should be managed with caution as the study used a cross-sectional design. The absence of job position or posture analysis that could help determine the remark at which awkward postures, bending postures and twisting postures are determined was limited in this study. Moreover, it might be problematic to take a broad view the findings to the overall work settings of Adama Town in Ethiopia, which is developing country. The study dealt with only a specific segment of labor force, which isn't representative of other beauty salon within other urban settings within a country.

CONCLUSION

The study concluded that lower and back pains or disorder of muscular skeletal pains were found to be prevalent among beauty salon workers and that to be associated with age of respondents, alcohol consumptions, health and safety training, work postures, and length of service. Thus, author forwarded that workshop, seminar programs for management of muscular skeletal pain or disorders need to address these factors. Also, future investigations with larger samples and multiple sectors with strong designs, such as longitudinal studies, are significantly suggested.

AUTHOR CONTRIBUTIONS

Sina Temesgen T. contributed in developing methods, conceiving the idea, participated in data collection, data analysis, reanalyzed the data, developed manuscript and accepting comments from reviewers. Sintayehu Kebede K. involved in data collection, facilitated collection methods and entry of data into EPI data. Both Authors equally contributed

COMPETING INTERESTS

The investigators or authors declared that there isn't competing interests.

ACKNOWLEDGMENT

The authors would like to encompass genuine gratitude to Hawassa University and Tula Health Bureau supported in materials whereas Adama Science and Technology Institute University supported us by facilitating work place and other settlement and also the authors thankful to all data collectors, supervisors and all those who were participated in the study.

REFERENCES

1. Abia WA, Fomboh R, Ntungwe E, Abia EA, Serika WA, Ageh MT. Assessment of occupational health hazards awareness and common

OPEN OACCESS Freely available online

Tolera ST, et al.

practices amongst barbers and hairdressers in Cameroon. J Public Health Dev Ctries. 2016;2(1):94-101.

- Singh V, Goyal N, Singh A, Bhatty SM, Deane A, Prakash JS. Upper limb musculoskeletal disorders associated with computer usage in health-care professionals. Int J Med Sci Public Health. 2015;4(11):1615-1619.
- 3. Daka D. Barbers knowledge and practice of biological hazards in relation to their occupation: A case of Hawassa Town, Southern Ethiopia. J Public Health Epidemiol. 2017;9(8):219-25.
- Mandiracioglu A, Kose S, Gozaydin A, Turken M, Kuzucu L. Occupational health risks of barbers and coiffeurs in Izmir. Indian J Occup Environ Med. 2009;13(2):92.
- 5. http://www.hse.gov.uk/research/rrpdf/rr799.pdf
- Lugay CIP, Matias AC. Predictive models of work-related musculoskeletal disorders (WMSD) s among sewing machine operators in the garments industry. Asia Pacific Journal of Multidisciplinary Research. 2015;3(1):56-63.
- 7. Ryu E, Ye B, Yi Y, Kim J. Risk factors of musculoskeletal symptoms in university hospital nurses. Ann Occup Environ Med. 2014;26(1):47.
- 8. Berberoglu U, Tokuç B. Work-related musculoskeletal disorders at two textile factories in Edirne, Turkey. Balkan Med J. 2013;30:23-27.
- Huisstede BM, Bierma-Zeinstra SM, Koes BW, Verhaar JA. Incidence and prevalence of upper-extremity musculoskeletal disorders. A systematic appraisal of the literature. BMC Musculoskelet Disord. 2006;7(1):7.
- 10. https://www.coursehero.com/file/32111231/msdpdf/
- Collins RM, Janse Van Rensburg DC, Patricios JS. Common workrelated musculoskeletal strains and injuries. South African Family Practice. 2011;53(3):240-246.
- Rathi M, Oza PA, Palekar T, Gazbare P, Khandare S. Effect of ergonomic advice on upper extremity work related musculoskeletal disorders in house-keepers. Int J Sci Res Educ. 2017;5:6419-6424.
- Arokoski JP, Nevala-Puranen N, Danner R, Halonen M, Tikkanen R. Occupationally oriented medical rehabilitation and hairdressers' work techniques-A one-and-a-half-year follow-up. Int J Occup Saf Ergon. 1998;4(1):43-56.
- Rezaeian T, Motiallah T, Ghanbari N, Moghimi F, Pirouzi S. Prevalence of foot structural deformities in female hairdressers working in Shiraz. Physical Treatments. 2015;5(2):73-82.
- Aweto HA, Tella BA, Johnson OY. Prevalence of work-related musculoskeletal disorders among hairdressers. Int J Occup Med Environ Health. 2015;28(3):545.
- Mussi G, Gouveia N. Prevalence of work-related musculoskeletal disorders in Brazilian hairdressers. Occupational medicine. 2008;58(5):367-369.
- Tsigonia A, Tanagra D, Linos A, Merekoulias G, Alexopoulos E. Musculoskeletal disorders among cosmetologists. Int J Environ Res Public Health. 2009;6(12):2967-2979.
- 18. Seyyed Ali MN, Ramazan M. Musculoskeletal loads due to posture, repetition, and force by rapid upper limb assessment in a textile factory. Health Scope 2012;1(1): 18-24.
- 19. Pelissier C, Fontana L, Fort E, Agard JP, Couprie F, Delaygue B, et al. Occupational risk factors for upper-limb and neck musculoskeletal disorder among health-care staff in nursing homes for the elderly in France. Industrial health. 2014;2013-0223.
- Rodrigues EV, Gomes AR, Tanhoffer AI, Leite N. Effects of exercise on pain of musculoskeletal disorders: a systematic review. Acta ortopedica brasileira. 2014;22(6):334-338.

- Naz H, Kwatra S, Ojha P. Prevalence of musculoskeletal disorders among handloom weavers of Uttarak hand: Journal of Applied and Natural Science. 2015;7(1):102-105.
- 22. Moodley R, Naidoo S. Prevalence of musculoskeletal disorders among dentists in KwaZulu- Natal. S Afr Dent J. 2015;70(3): 98-103.
- 23. Kaushik A, Patra P, HOD P, Dolphin PG. Upper extremity and neck disability in male hairdressers with concurrent changes in pinch strength: an observational study. Age. 2014;4:6.
- Phedy P, Gatam L. Prevalence and associated factors of musculoskeletal disorders among young dentists in Indonesia. Malaysian orthopaedic journal. 2016;10(2):1.
- 25. Skillgate E, Vingård E, Josephson M, Holm LW, Alfredsson L. Is smoking and alcohol consumption associated with long-term sick leave due to unspecific back or neck pain among employees in the public sector? Results of a three-year follow-up cohort study. Journal of rehabilitation medicine. 2009 5;41(7):550-556.
- 26. Kebede Deyyas W, Tafese A. Environmental and organizational factors associated with elbow/forearm and hand/wrist disorder among sewing machine operators of garment industry in Ethiopia. Journal of environmental and public health 2014;1-9.
- 27. Alshagga MA, Nimer AR, Yan LP, Ibrahim IA, Al-Ghamdi SS, Al-Dubai SA. Prevalence and factors associated with neck, shoulder and low back pains among medical students in a Malaysian Medical College. BMC research notes. 2013;6(1):244.
- Tafese A, Nega A, Kifle M, Kebede W. Predictors of occupational exposure to neck and shoulder musculoskeletal disorders among sewing machine operators of garment industries in Ethiopia. Science Journal of Public Health. 2014;2(6):577-583.
- 29. Ministry of Labour and Social Affairs. Occupational safety and health, profile for Ethiopia, Addsi Ababa. 2006;2(1);67-78.
- Siegbert Uhlig. Encyclopaedia Aethiopica. Wiesbaden: Harrassowitz Verlag. 2003.
- https://www.pewresearch.org/fact-tank/2019/06/17/worldspopulation-is-projected-to-nearly-stop-growing-by-the-end-of-thecentury/
- Kuorinka I, Jonsson B, Kilbom A, Vinterberg H, Biering-Sørensen F, Andersson G, et al. Standardized Nordic questionnaires for the analysis of musculoskeletal symptoms. Appl Ergon. 1987;18(3):233-237.
- 33. Solis-Soto MT, Schön A, Solis-Soto A, Parra M, Radon K. Prevalence of musculoskeletal disorders among school teachers from urban and rural areas in Chuquisaca, Bolivia: A cross-sectional study. BMC Musculoskelet Disord. 2017;18(1):425.
- 34. Abebaw T, Weldegebriel MK, Gebremichael B, Abaerei AA. Prevalence and associated factors of low back pain among teachers working at governmental primary schools in Addis Ababa, Ethiopia: Biomedical Journal of Scientific and Technical Research. 2018;1-6.
- Macdonald S, MacIntyre P. The generic job satisfaction scale: Scale development and its correlates. Employee Assistance Quarterly. 1997;13(2):1-6.
- 36. Shukla A, Srivastava R. Development of short questionnaire to measure an extended set of role expectation conflict, co-worker support and work-life balance: The new job stress scale. Cogent business & management. 2016;3(1):1.
- Von Korff M, Ormel J, Keefe FJ, Dworkin SF. Grading the severity of chronic pain. Pain.1992;50(2):133-149.
- Bradshaw L, Harris-Roberts J, Bowen J, Rahman S, Fishwick D. Self-reported work-related symptoms in hairdressers. Occupational Medicine. 2011;61(5):328-334.

Tolera ST, et al.

OPEN OACCESS Freely available online

- Emmanuel NM, Ezhilarasu P, Bheemarao AB. Low Back Pain among Nurses in a Tertiary Hospital, South India. J Osteoporos Phys Act. 2015;4(3):1-3.
- 40. Okunribido OO, Wynn T, Lewis D. Are older workers at greater risk

of musculoskeletal disorders in the workplace than young workers? A literature review. Occupational Ergonomics. 2011;10(1,2):53-68.

41. Erick PN, Smith DR. A systematic review of musculoskeletal disorders among school teachers. BMC Musculoskelet Disord. 2011;12(1):260.