Knowledge, attitude and practices regarding respiratory symptoms among textile workers of Karachi, Pakistan: a cross-sectional survey

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Abstract

Objectives: To determine the prevalence and predictors of good knowledge, appropriate attitude and appropriate protective practices regarding respiratory symptoms among textile workers, and to determine the association of knowledge, attitude and practices with respiratory symptoms.

Methods: The cross-sectional study was conducted in 2009 and comprised male workers from 15 textile mills in and around Karachi. A structured and pre-tested questionnaire was used which included questions to explore the knowledge, attitude and practices regarding respiratory symptoms. SPSS 19 was used for statistical analysis.

Results: The study had a sample size of 372 and found prevalence of good knowledge to be in 182 (48.9%) workers and appropriate attitude in 302 (81%), while only 80 (21%) were practising these measures appropriately. Being educated and older than 38 years of age, belonging to Sindhi ethnicity, and working in the weaving section were significant (p<0.05) predictors of knowledge, attitude and practices. Generally, there was no significant association of knowledge, attitude and practices with respiratory symptoms (p>0.05).

Conclusions: There was low prevalence of appropriate practices, high prevalence of good knowledge and attitude, indicating an interplay of several other social and environmental factors which need to be explored.

Keywords: Textile workers, Knowledge, Attitude and Practices, Respiratory symptoms, Pakistan. (JPMA 65: 17; 2015)

Introduction

Poor knowledge and unsafe practices may pose several health hazards to textile workers as they are exposed to adverse conditions with no control over the length and magnitude of exposure.[1,2] The heavy exposure to cotton dust at work makes them vulnerable to developing several respiratory symptoms and illnesses, including byssinosis, chronic bronchitis, chest tightness and others, resulting ultimately in severe pulmonary disability after prolonged duration of work.[3,4] The burden of respiratory illnesses varies among different sections of cotton textile industries, and the highest prevalence is reported in the sections exposing the worker to the greatest amount of cotton dust, such as bale opening, blowing, carding and spinning.[1,5]

Unlike the developed world, where the severity and extent of the problem is well studied, being followed subsequently by interventions and regulations, these preventive measures are virtually non-existent in the low- and middle-income countries.[6] A study from India showed the morbidity profile among cotton mill workers. The common morbid conditions included byssinosis grade 1 (7.80%), chronic bronchitis (4.85%), and upper respiratory tract infection (URTI) (8.64%) along with certain other cellular changes in the body.[7] A study from Pakistan on cotton spinning mill workers similarly indicated a significantly high association of byssinosis in ring area (odds ratio [OR]= 2.0), followed by carding (OR = 1.3).[5] A recent survey of textile workers from Karachi found the prevalence of byssinosis to be 10.5%, while common symptoms included wheezing (22.3%), shortness of breath (grade 2) (21%), and chest tightness (33.3%). Important risk factors identified in the study were lack of education, working in the spinning section, and prolonged duration of work.[8]

Safe practices depend on having an appropriate attitude towards the health risks associated with exposure, which in turn depends upon knowledge about the dangerous and harmful effects related to its exposure.[9] On the contrary, some studies have highlighted a wide gap between knowledge level and practices regarding the use of protective equipment,[10] thus indicating factors other than knowledge and attitude influencing the adoption of safety practices in these workers. Although millions of industrial workers around the world are involved in different hazardous work-related exposures on a daily basis, but literature on their knowledge, attitude and practices related to the exposures is scarce.[9] There is a lack of such studies particularly among textile workers from Pakistan. A study reported that 72% of textile workers in spinning mills of Karachi were using safety gadgets,

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including face masks. It also found a strong association of byssinosis to non-usage of safety gadgets among these workers (OR = 4.8).[5]

There is a large workforce occupationally exposed to cotton dust in Pakistan and other developing countries, but, little is known about their knowledge and attitude toward the detrimental effects of cotton dust. The present study was planned to reveal gaps in the knowledge of textile workers and to offer an insight into their attitudes and practices, so that appropriate preventive measures could be recommended. Specifically, the study aimed at determining the prevalence and predictors of good knowledge, appropriate attitude and appropriate protective practices regarding respiratory symptoms among textile workers of Karachi, and to determine the association of knowledge, attitude and practices with respiratory symptoms.

Subjects and Methods

The cross-sectional study was conducted in 2009 and comprised male workers from 15 textile mills in and around Karachi, which is the largest urban centre of Pakistan, currently estimated to have a population of over 16 million according to official sources.[11] However, unofficial estimates put the figure at more than 21 million which comprises a mix of various ethno-linguistic groups found in the country.[12] The city has approximately 4,500 industrial units in the formal sector but little is known about the informal sector, where an estimated 75% of the working population is employed.[13]

The detailed methodology of this study is given elsewhere however,[8] briefly, this was a cross-sectional survey conducted in 2009 among male textile workers of Karachi, Pakistan.

After approval by the ethics review committee of Aga Khan University, Karachi, the study included samples from the five main industrial areas in the city where textile mills are located, including a total of 15 textile mills, one each from; Korangi/Landhi Industrial Area and North Karachi Industrial Area; two from Federal B Area Industrial Area; 4 each from Sindh Industrial Trading Estate (SITE) and SITE Super Highway. Besides, one mill each from Ittehad Town, Baldia Town and SITE Nooriabad, located in the suburbs of Karachi, was also included.

We recruited a total of 372 male textile workers. The sample size was calculated on the basis of the prevalence of knowledge (63%), attitude (76%) and practices (22%).[10] A minimum sample of 369 workers was required to achieve a 95% confidence level (CI) with 5% bound on error for an estimated prevalence of appropriate

knowledge at 63%.[10]

The workers included were working in sections of weaving and spinning for at least 1 year and aged 18 years or more. Approximately half of the sample was selected from spinning and the other half from the weaving section. A relatively quiet room/area within the mill was identified for conducting the interviews. Workers were recruited into the study with the help of attendance registers. Written informed consent was taken from all the participants before being enrolled in the study and confidentiality of data was strictly maintained.

To gather relevant information, open-ended questions were designed. On the basis of the responses, categories were generated and their frequencies were analysed. The American Thoracic Society Division of Lung Disease questionnaire (ATS-DLD-78A)[14] was used to assess the respiratory symptoms among the workers. It included questions regarding cough, phlegm, wheezing, shortness of breath, other chest and past illnesses and family history. Questions pertaining to chest tightness were added from the respiratory questionnaire of World Health Organisation (WHO) technical report series 684.[15]

The structured questionnaire was translated into Urdu, back-translated into English and pretested before using it in the study. The interviews were conducted by trained data collectors and the time required for filling in the questionnaire was approximately 20 to 30 minutes each.

Collected data was entered on Epidata 3.1 and analysed using SPSS 19. The responses of open-ended questions were categorised into main groups which were further analysed for frequencies. There were certain multiple responses which were then broken up into single responses and then analysed. Responses on knowledge, attitude and practices were categorised into having or not having good knowledge, appropriate attitude and appropriate protective practices. These categories were generated on the basis of literature.[9] Thus, the proportions, with their 95% CI of subjects with good knowledge, appropriate attitude and appropriate protective practices were calculated.

Multi-collinearity was assessed between all independent variables as well as between the respiratory symptoms. Univariable OR and their 95% CI were calculated to assess associations between good knowledge, appropriate attitude, appropriate protective practices and the covariates (age, education, socio-economic status, pack years of smoking, duration of work, and section of textile mill). All variables with $p \leq 0.25$ were included in the multivariable regression models. Separate models were

developed to identify factors that influenced the knowledge, attitude and practices of the workers.

Multivariable models were also developed to assess the association of good knowledge, appropriate attitude and appropriate protective practices with respiratory symptoms (cough, phlegm, and wheeze, shortness of breath [SOB] grade 1 and 2, and chest tightness).

Results

Major categories derived on the basis of open-ended questions were worked out at the outset (Table-1). Only 98 (26%) of the workers said they were using any protective measure at work, out of which 80 (81.6%) were using a face mask or cloth to cover the face. The lungs were the most frequently cited organ for the harmful effects of cotton dust 316 (85.2%). However, 38 (10%) of the workers did not know of any harmful effects of cotton dust at all. Besides, 223 (60.8%) of the workers stated covering face or using a face mask at work, 67 (17.7%) stated the use of brown sugar, 26 (7.8%) stated using

Table-1: Response to questions* on knowledge, attitude and practices regarding respiratory symptoms and illnesses among textile workers.

Questions	Categories of responses (%)
Specific protective measures used at work[a]	Face mask (N=80) (81)
	Others[d] (39)
	None (3)
Possible health hazards of cotton dst exposure[b]	Lungs/respiratory system (85)
	Cardiovascular system (CVS)(1)
	Gastrointestinal tract (GIT)/abdomen (3)
	Kidneys (3)
	Generalized weakness (6)
	Don't know (10)
Possible protective measures[c]	Not possible (5)
	Quit job/change job (7)
	Cover face (60)
	Brown sugar (18)
	Good diet (5)
	Individual level efforts (7)
	Environment (3)
	Worker facilities (5)
	Don't know (10)

*Multiple response data analysis involving responses with sums which may add up to greater than 100%.

[a]N =80. This includes only those who answered in the affirmative when asked:Do you use any protective measures at work?

[b]Question asked: What are the possible health hazards of cotton dust exposure?

[c]Question asked: What protective measures should be taken to protect from these hazards.

[d]Brown sugar, keep clean, change clothes/uniform/wear sweater/gloves, good diet, work carefully, avoid dust/avoid smoking, keep mouth shut/don't talk a lot.

Table-2: Frequency distribution of good knowledge, appropriate attitude and appropriate protective practices among textile workers.

Variable	Frequency (%)	95% CI
Good knowledge[a]	182 (49)	43.7-54.1
Appropriate attitude[b]	302 (81)	76.7-84.9
Appropriate protective practices[c]	80 (21)	17.5-26.1

[a]Knowledge of health hazards of cotton dust (respiratory system) plus knowledge of specific protective measures (like use of face masks).

[b]Agreement that using protective measures will save from occupational diseases.

[c]Stating the use of a face mask/cloth to cover face while working in the cotton dust.

individual measures at work and 26 (7.3%) stated quitting/changing job as an option. However, 10 (10.8%) of the workers did not know of any protective measure at work while 9 (5.1%) stated that protection wasn't possible.

Overall, 182(48.9%; 95% CI: 43.7-54.1) workers were assessed to have good knowledge, while 302(81%; 95% CI: 76.7-84.9) workers had appropriate attitude towards cotton dust exposure. However, only 80 workers (21%; 95% CI: 17.5-26.1) were actually practicing these measures appropriately.

On univariate analysis, age, education, ethnicities, socio economic status, duration of work, section of work, mill area, were found to be significantly associated ($p<0.05$) with having good knowledge, appropriate attitude and appropriate protective practices.

On multivariable logistic regression analysis, good knowledge was found to be significantly associated with being educated (Adjusted OR [AOR]: 2.0; 95% CI: 1.2-3.4), being older than 38 years of age (AOR: 1.9; 95% CI: 1.0-3.7), while belonging to Sindhi ethnic group made the worker less likely to have good knowledge (AOR: 0.5; 95% CI: 0.3-0.9)(Table-3). Appropriate attitude was associated with having good knowledge (AOR: 2.6; 95% CI: 1.4-4.9), being educated (AOR: 2.3; 95% CI: 1.3-4.3), being older than 38 years (AOR: 3.1; 95% CI: 1.1-8.3) while those working in mill cluster area 1 were less likely to have appropriate attitude (AOR: 0.4; 95% CI: 0.2-0.8). Appropriate protective practices at work were significantly associated with having good knowledge (AOR: 4.0; 95% CI: 2.1-7.3), having appropriate attitude (AOR: 6.8; 95% CI: 1.9-23.3), working in mill cluster 1 (AOR: 3.7; 95% CI: 1.7-7.9) while working in the weaving section made the worker less likely to use appropriate protective practices (AOR: 0.4; 95% CI: 0.2-0.8).

Multivariable logistic regression analysis showed no significant association of good knowledge, and appropriate attitude with frequent or chronic respiratory

Table-3: Multivariable analysis for predictors of good knowledge, appropriate attitude and appropriate protective practices among textile workers.

Variable	Good knowledge[a] AOR (95% CI)	Appropriate attitude[b] AOR (95% CI)	Appropriate protective[c] practices AOR (95% CI)
Good Knowledge			
No	–	1	1
Yes		2.6 (1.4-4.9)	4.0 (2.1-7.3)
Appropriate Attitude			
No	–	–	1
Yes			6.8 (1.9-23.3)
Education status			
Uneducated[d]	1	1	–
Educated[e]	2.0 (1.2-3.4)	2.3 (1.3-4.3)	
Ethnicity[f]			
Punjabi[g]	1	–	–
Sindhi	0.5 (0.3-0.9)		
Others	0.9 (0.5-1.6)		
Age (in years)			
18-27	1	1	1
28-37	1.4 (0.8-2.4)	1.3 (0.6-3.0)	1.4 (0.7-2.9)
38+	1.9 (1.0-3.7)	3.1 (1.1-8.3)	1.6 (0.6-4.0)
Smoking status			
Non smoker	1		
Less than 10 pack years	1.7 (0.7-4.4)	–	–
10 or more pack years	1.5 (0.6-3.8)		
Mill area[h]			
Cluster 3	1	1	1
Cluster 2	0.6 (0.3-1.1)	0.8 (0.4-1.8)	0.9 (0.4-2.0)
Cluster 1	0.6 (0.3-1.1)	0.4 (0.2-0.8)	3.7 (1.7-7.9)
Socio economic status			
Least		1	
Lower	–	0.8 (0.4-1.7)	–
Low		2.2 (0.9-5.3)	
Highest		1.3 (0.6-2.9)	
Section of work			
Spinning	–	–	1
Weaving			0.4 (0.2-0.8)

[a]Knowledge of health hazards of cotton dust (respiratory system) plus knowledge of specific protective measures (like use of face masks).

[b]Agreement that using protective measures will save from occupational diseases.

[c]Stating the use of a face mask/cloth to cover face while working in the cotton dust.

[d]No formal education.

[e]Primary, lower secondary, matriculation and above.

[f]Based on information of Mother tongue.

[g]Includes other ethno-linguistic groups: Urdu, Pushto, Baluchi, Seraiki, Hindko, Kohistani and Kashmiri.

[h]Where cluster 1 comprises of: SITE Super Highway and Landhi/Korangi Industrial areas; cluster 2: Baldia Town and Ittehad Town; cluster 3: SITE; cluster 4: SITE Nooriabad; and cluster 5: North Karachi and F.B. Area Industrial areas.

symptoms (p>0.05).

Discussion

This study is the first of its kind in exploring the knowledge, attitude and practices of textile workers and the factors that influence them. Previous studies have been an estimation of the magnitude of chronic respiratory symptoms and illnesses among this study group, whereas this is an exploration into some of the factors that may have led to the rise in burden of these respiratory symptoms and illnesses.[1,16] Results show that a significant proportion of the textile workers had good knowledge and appropriate attitude towards cotton dust exposure, but appropriate protective practices were not being adopted by most of them. Knowledge of the harmful effects of cotton dust appears to have some

effect on the attitude towards safety measures, but both good knowledge and safe practices had little influence on the adoption of safe practices in the study group. A study conducted in Hong Kong among a sample of industrial workers showed similar findings regarding knowledge, attitude and practices among them.[9] This discrepancy has been observed in several study groups working in the informal sectors,[17] thus highlighting the fact that workers may be aware of occupational and environmental health hazards, but absence of a clear policy and the lack of implementation of preventive strategies discourage investment in occupational health and safety. Apart from these policies, discomfort is a factor that has been shown to offer additional hindrance in practicing safety measures at work. This further leads to low compliance with the prescribed protective equipment.[18,19] It has been documented that temperature and working conditions of the industries make it challenging to comply with prescribed protective equipment. Thus compliance would be improved if more attention was given to designing protective equipment that is user-friendly with minimal discomfort involved while using. Personal protective measures being user-dependent can be uncomfortable and would fail to bring about the desired effect on health of the workers if not correctly used.[1]

Regarding specific protective measures at work, majority of the study participants stated the use of face masks as possible protective measure. Face masks are an affordable measure that have been used in similar study settings for personal protection[19] and have shown to reduce exposure to environmental hazards. A significant number of workers also stated the use of brown sugar (called gurr in local language) as a protective measure against cotton dust exposure. Similar self-medication strategies have been in use by certain industries having poor dust control measures.[1,20] Although there is no known research on the effect of the use of brown sugar and sweet foods/drinks, but workers have been found to have strong beliefs in traditional use of gurr, sweets, and sweetened tea to minimise the side effects of cotton dust on a routine basis. Environmental exposure associated with the textile industry was also a factor considered in the causation of increased cotton dust exposure in the setting. Previous studies suggest that the working environment in the mill may be responsible for workers' respiratory symptoms, as perceived by the workers.[1] These findings highlight the dire need of some important implications for policy and practice, suggesting the use of a workplace having a conducive environment, regular health check-ups of the workers and proper protective and curative services at the workplace.

We included certain open-ended questions that were administered in order to assess the knowledge, attitude and practices of the workers. We believe this to be one of the strengths of the study, as closed-ended questions leave the respondents with few options to answer each question. Open-ended questions are more flexible in that they can test issues that require, for example, creativity and spontaneity. Studies that have used open-ended questions as a tool have been able to explore more effectively into the knowledge, attitudes and practices of their respondents.[21,22]

Although there are studies assessing the knowledge, attitude and practices of industrial workers, but there is dearth of research on textile workers.[17-19] A cross-sectional survey in India aiming to assess the level of awareness of health problems among garment workers and their attitudes and practices to prevent the health problems showed similar findings.[10] Workers from different sections were recruited and more than one half of the workers were aware of the benefits of personal protective equipment, but only a few were using them. Most reasons stated included lack of availability of safety devices, high cost and personal protective equipment not being supplied by owners of the industry. They also complained of hindrance in work while using the equipment. Another study among salt workers in Rajasthan, India, showed a huge gap between the knowledge and practice of protective devices to save them from occupational health problems, though they suggested improvements in the design of protective devices to increase their acceptability and compliance.[23]

Most occupational health and safety studies conducted in developing countries revealed that increased educational level has been associated with decreased work-related injuries.[23] This is due to the fact that education is more likely to increase workers' health and safety practices that can subsequently prevent them from occupational injuries. Our study had similar findings, showing education as significantly associated with good knowledge and appropriate attitude. However, this did not translate into the use of appropriate protective practices. Working in mill cluster was significantly associated with using appropriate protective practices, but they were less likely to have an appropriate attitude. This again highlights the gap between attitude and practices of the workers which may be due to generally better safety culture at mills in that particular cluster. Workers belonging to Sindhi ethnic group were less likely to have good knowledge. This relates to the previous finding where the ethnic group of Sindhis was more likely to have chest tightness (AOR=2.7; 95% CI: 1.1 to 6.6)

compared to Punjabi workers.[8] The lack of good knowledge could be a plausible cause for the chronic respiratory symptoms reported among this ethnic group.

The study results revealed that good knowledge, appropriate attitude and appropriate protective practices had a favourable effect on a majority of frequent respiratory symptoms after adjusting for confounders, but generally the associations were insignificant. There may be two possible explanations for such a finding. Firstly, the outcome in the form of respiratory symptoms is affected by the interplay of a number of other factors apart from having good knowledge, appropriate attitude or the use of appropriate protective practices. These factors may occur at either the individual or the workplace level. Individual factors may include the workers' interest in his health,[17] his willingness to learn about the health hazards at workplace, motivation of the worker towards the adoption of protective measures, while at the workplace level there may be factors like the number and quality of safety trainings of workers within the industry, the organisation's safety climate,[24] appropriate resource availability and the application of safety trainings in practice. A recent review of safety trainings to workers has shown similar effects in health of the workers, both positive and negative relations, which are generally small in size. These studies emphasised the importance of psychosocial factors having an influence on the adoption and modification of work environment.[25] The second explanation may be an inadequate sample size, which may have resulted in insignificant associations of good knowledge, appropriate attitude or the use of appropriate protective practices on respiratory symptoms.

This study also had a few limitations. The categories on knowledge, attitude and practices were generated using responses from open-ended questions, but this component could have been improved by using qualitative research methods such as focus group discussions in order to get a better understanding of the thoughts and perceptions of textile workers. This would have also allowed us to explore the reasons for not using safety devices at work. Healthy worker effect is also a potential limitation whereby those healthy may have been working, while the severely ill and chronically disabled may have been excluded from employment, thus leading to an over-representation of healthy workers with effects on the study outcomes. Healthy workers may be more aware of the health hazards at textile mills leading to an over-estimation of good knowledge and appropriate attitude, while on the other hand they may be less likely to adopt safety precautions thus leading to an underestimation of appropriate practices. Although

this study sample may only represent the knowledge, attitude and practices of workers in the textile industry of Karachi, but we believe that the findings may be generalised despite the limitations to similar workforce in other developing countries.

Conclusion

Safe practices do not necessarily depend on good knowledge and appropriate attitude of workers. Interplay of various other factors highlights the need of a holistic approach towards protection of a workers' health in a vulnerable workplace. Also, the translation of safe practices into improved health may not necessarily depend on good knowledge and appropriate attitude of workers. A conducive work environment with interventions for safe practices is imperative for protecting the health of textile workers.

Acknowledgements

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