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ORIENTATION OF COTTON GROWERS OF MULTAN DISTRICT ABOUT HEALTH HAZARDS AND PESTICIDE USE

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Cotton growing farmers and cotton pickers are the twin pillars of cotton growing community. Cotton growing farmers (male) are involved in monitoring of quality and quantity of cotton crops by handsome usage of pesticides for better marketing of cotton crops. Whereas, cotton pickers (female) are involved in picking of cotton mainly. To assess their knowledge and source of knowledge about pesticides related health problems, the study was designed and conducted in 20 villages of district Multan selected by multistage random sampling technique. From the selected 20 villages, from the list bearing the villages, mouzas and union councils of district Multan, 220 cotton growers and 150 cotton pickers were selected by simple random sampling technique and interviewed through a reliable and validated interview schedule. The data collected were processed through Statistical Package for Social Sciences (SPSS). The results showed that 75% of cotton growing farmers were having orientation about side effects of pesticides whereas, almost 8% of cotton growers were having no knowledge about side effects of pesticides.
Keywords: Orientation, pesticides, health hazards, cotton growing community.

INTRODUCTION

Cotton fiber is at the top priority in choice by almost six billion consumers all over the world for their clothing and wearing accessories. From Bermen to Beijing to Brasila, consumers worldwide overwhelmingly preferred cotton, according to the recent Global Lifestyle Monitor Survey–GLM III–the findings were released in 2004 by Cotton Council International and Cotton Incorporated. A research survey conducted third time since 1999, showed that more consumers than ever considered cotton fiber content a key factor in clothing purchases, 78% of respondents, up from 75% in the previous survey in 2001. More than half i.e. 70% of those in the latest survey informed that they preferred clothing made of cotton to any other fiber natural or synthetic (World Report, 2005). According to ICACI the world cotton production in 2005-06 was decreased by 1.5 million tons or 6.96 million bales from previous season to 24.78 million tons (113.81 millions bales of 480 lbs each). While cotton production was forecasted at 24.69 million tons or 113.4 million bales in 2006 07, major increases in production were expected in China (mainland), Pakistan and India.

During (2005-06), cotton crop yield was also declined to 713 kgs. per hectare, thereby showing a decrease of 9.3% over the target and 6.2% over the achievement of 2004-05 season (GOP, 2006).According to Export Promotion Bureau of Pakistan, exports of textile manufactures grew by 19.2%, prominent among those were exports of bed wear (58.4%), readymade garments (31.0%), cotton yarn (21.4%), cotton cloth (16.5%) and towels (12.0%). (EPB, 2006). The Federal Committee on Agriculture in Pakistan (FCA) had fixed the cotton production target for 2005-06 at 12 million bales. Subsequently, it was enhanced to 15 million bales from an area of 3,247 million hectares. National yield was thus envisaged at 786 kgs. per hectare. According to available information, the weather conditions and flood in some districts of the Punjab and pest attack in Sindh had effected the cotton crop, resulting the declined production to 13.0 million bales achieved from 3.10 million hectares, showing decrease of 13% in production and 4.53% in area over the targets of 2005-06 season and 8.87% and 2.88% respectively over the achievements in the last season (2004-05). Cotton growing community comprises of cotton grower male farmers and cotton picker women. The role of women in national growth and development has been reaffirmed in the International Conference on Population and Development (ICPD) 1994 which emphasized to provide women with more rights and choices in access to education, health services, skill development, and employment and eliminate the practices that discriminate against women all over the world (United Nation, 1995).

Both of these two groups of cotton growing community are exposed to pesticide chemicals directly or indirectly, leading to pesticide related health hazards. Cotton picker women are engaged in cotton picking for a period of two to three months per year. This phenomenon of cotton picking eclipses their persistent

and prolonged exposure to pesticides and toxic chemicals, which may cause severe health problems. During cotton picking, they are vulnerable to cuts and skin rashes that further expose them for absorption of pesticides into blood circulation resulting in health hazards and problems (Ruma *et al.,* 2004). Married cotton picker women have history of cotton picking during pregnancy and lactation, which poses additional complicated reproductive health problems. It was observed during data collection that cotton pickers rarely covered their mouth and nose during their working therefore; inhalation of dust particles was there, resulting in respiratory tract problems. During cotton picking, pesticide poisoning enhances the symptoms of sneezing, rhinitis, vague muscular pains, vertigo, dizziness, nausea, vomiting, skin rashes, urticaria, itching, cough, headache, dermal blisters, and respiratory disorders (Garcia, 2003). Jack (2003) observed that corneal, trauma, corneal ulcers and fungal ulcers were proved to be chronic in nature among farmers particularly among cotton pickers. These ulcers if not treated properly, may lead to thinning or perforation of cornea leading to prolapse or collapse of eyeball, ending in corneal opacities or blindness. Javaid *et al.* (2006) conducted the study, for effect of organophosphate (OP) pesticide exposure on cholinesterase (ChE) activities and concluded that pest controlling workers had significantly lowered plasma cholinesterase (PChE) and erythrocyte cholinesterase (AChE) activities as compared to controls ($P<0.001$). In addition, 13.5% and 10.9% of the exposed respondents were found to have PChE and AChE activities below the lower levels of the controls respectively. Among population exposed to pesticides, the "spray men" and the respondents who had exposure for five years were found to be the most affected groups. The study revealed that the health risks were more eminent in farmers and workers with exposure to pesticides and were of acute in nature. Pre-placement and regular periodic medical examination and creation of awareness among the exposed population were recommended to minimize the pesticide related health hazards. In another research work, Karin (2007) narrated her study entitled “weakest link in the textile chain cotton pickers’ pesticides exposure” about health effects of pesticides exposure in Pakistan. In the study she described pesticide situation in Pakistan. She depicted that 80 percent of total pesticides consumption was for cotton crops. The trade liberalization and pesticide treadmill raised consumptions of pesticides and plant protection practices. The main health hazards faced by respondents were carcinogenic in nature. Direct exposure to pesticide chemicals headache via picking; indirect drinking water; food chain and inhaling were the root of entrance into the human body. The pesticides related health problems were observed from respiratory problem to death. Also there were chronic health hazards e.g. from impaired memory to depression. She also described that 25 to 77 million workers directly or indirectly were effected by pesticides. Whereas, approximately one million hospitalized every year with 37000 cancer cases and 20000 deaths annually due to pesticides poisoning. Cotton pickers were affected by direct exposure through inhalation, in taking poisoned water, food, seed oils, while handling cotton stalks for fuel purposes, increasing risk in pregnancy and breast feedings.

MATERIALS AND METHODS

By using multiple stage simple random sampling technique, 20 villages from district Multan were selected. Thus 220 cotton grower respondents and 150 cotton picker females from a population of 5000 were selected by using Fitzgibbon *et al*. (1987) table. Keeping in view the objectives of the study, an interview schedule was developed for data collection. The data collected were analyzed by using Statistical Package for Social Sciences (SPSS).

RESULTS AND DISCUSSION

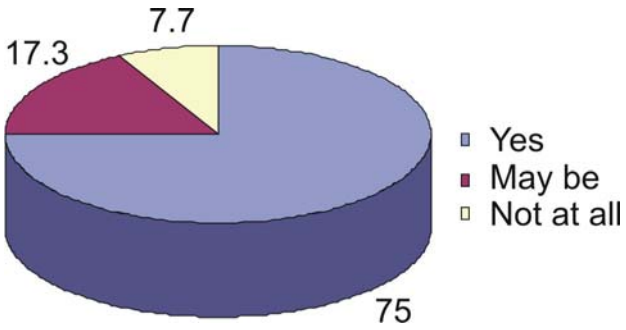
Chemicals used as toxic ingredients in pesticides to kill the pests are either harmful for human beings or not, the level of orientation of cotton growers (male) involved in pesticide usage practice, was probed and the feedback was mentioned in Table 1.

Table 1. Distribution of the cotton growers according to their awareness for side effects of pesticides on human health

Side-effects of pesticides on human health	f.	%age
Yes	165	75.0
May be	38	17.3
Not at all	17	7.7
Total	220	100.0

The data presented in the Table 1 indicate that 75% cotton grower farmers were oriented with health hazards of pesticides on human beings used to control insects and pests, almost 17% of respondents were having a little knowledge about injurious effects of pesticides while almost 8% of respondents considered them to be harmless for human health. Similar results were also found by the Siddaramaiah and Srinivas

(u.d.). Some respondents informed that they used to deseal/open the pesticide containers by using their teeth and some times small amount of pesticide got entry in to their oral cavity, they further added that it was tasteless having no bitter or sour taste and nothing was serious with them and it happened multiple times with many respondents. Respondents told that they had the knowledge about the toxicity of pesticides that was why they stored it carefully, away from reach of kids particularly. Even non educated cotton grower respondents informed that they had common sense that the pesticides could kill the pests which were living creatures and it might not be possible that the same pesticide chemical might be harmless for human beings because in both cases, targets were the living creatures and had almost similar pharmacokinetics for most of the chemicals used in pesticides.



To asses the orientation of cotton grower and cotton picker respondents about pesticide related chronic and lethal diseases, instrument was used by asking their level of knowledge about these health problems and their responses were presented in the following table.

It can be depicted from the data elaborated in Table 2 that majority of cotton grower respondents (male) with mean value ($\overline{X}$ = 2.52), was familiar with the correlation between asthmatic patients among cotton producing community and the chemical pesticides used for cotton crops. Some of the respondents narrated that the static asthmatic attacks in chronic asthmatic patients became higher in frequency when they were exposed to pesticides. Whereas, cotton pickers (female) with mean value ($\overline{X}$ = 2.38) were having the orientations about the same disease in its correlation with pesticide chemicals used for cotton crops. Hypertension or raised blood pressure was the known disease to the cotton-growing farmers having knowledge for its linkage with pesticide chemicals used for cotton crops. Whereas the knowledge of cotton growers (male) about the pesticide related reproductive health hazards e.g. breast cancer/tumors and abortion among pregnant females was poor.

In case of cotton pickers (female), most of the respondents with mean value ($\overline{X}$ = 2.61) were having orientation about breast cancer correlation with pesticide chemicals, followed by the respondents having orientation about cataract with mean value ($\overline{X}$ = 2.59) i.e. impairment of eye sight due to lenticular changes having linkage with pesticide chemicals. Dermatitis i.e. chronic disease of skin might be the persistent allergies of skin, according to most of the cotton pickers with mean value ($\overline{X}$ = 2.55) showed their knowledge about the linkage between the pesticide chemicals and the said skin problem. Whereas, cotton pickers were having poor knowledge about the pesticide relation with neuromuscular aches and asthma as compared to other diseases mentioned in the Table 2.

Statistical analysis supported the depicted results from the Table 2 that while comparing the cotton growers and the cotton pickers about their orientation of the diseases with reference to pesticide chemicals showed significant p-values for all the diseases except asthma and neuromuscular aches, with consideration of mean values, it was observed that cotton pickers were having better orientation as compared to cotton growers except the above mentioned two diseases. Due to poor literacy rate among cotton picker women respondents and poor, non-reliable sources of information about pesticide related health hazards as results shown in forthcoming table, most of them developed a psychological phobia for pesticide chemicals. This was the reason told by learned respondents about the feed back of cotton pickers.

Source of information is always playing a fundamental role in the practical approach and have an impact on results of an activity or a phenomenon therefore, source of information should be reliable, authenticated and latest if possible. Any misinformation or disinformation may result into poor, wrong outcome, an accident or even a disaster. To assess the source of information about the pesticide related health hazards, respondents were requested to answer and their responses were presented in Table 3.

The data mentioned in Table 03 indicate that most of the cotton growers (male) with mean value ($\overline{X}$ = 2.48) used the pesticide dealers as source of information about the pests/insects damaging their cotton crops and the usage of pesticide chemicals and they were at the top in rank order, followed by the male respondents with mean value ($\overline{X}$ = 1.42) using television as a source of information. Cotton growers with mean value ($\overline{X}$ = 1.19) were used to consult the agriculture officers/extension department as a source of

Table 2. Distribution of the respondents in terms of means, standard deviations and rank orders with respective t-values according to their knowledge about pesticide related diseases

Diseases	Cotton grower n = 220			Cotton picker n = 150			t-value	p-value
	$\overline{X}$	SD	R	$\overline{X}$	SD	R		
Breast Cancer	1.073	0.81	8	2.614	0.71	1	16.81	0.0000**
Cataract	2.015	0.58	4	2.596	0.70	2	6.81	0.0000**
Dermatitis	1.825	0.55	6	2.555	0.71	3	8.55	0.0000**
Abortion	1.294	0.89	7	2.536	0.71	4	13.25	0.0000**
Menstrual disturbance	0.528	0.37	9	2.423	0.71	5	23.61	0.0000**
Blood pressure	2.149	0.61	3	2.414	0.71	6	3.06	0.0024**
Asthma	2.529	0.70	1	2.386	0.66	7	-1.64	$0.1013^{N.S}$
Neuromuscular aches	2.475	0.70	2	2.355	0.69	8	-1.37	$0.1717^{N.S}$
Carcinoma of prostate	1.924	0.55	5	2.336	0.71	9	4.86	0.0000**

Scale: NA/Never = 0; Very occasionally = 1; Occasionally = 2; Frequently = 3

Table 3. Distribution of the respondents according to their source of information

Sources of information	Cotton grower n = 220			Cotton picker n = 150			t-value	p-value
	$\overline{X}$	S.D	R	$\overline{X}$	S.D	R		
Pesticide dealer	2.486	0.77	1	0.597	0.62	8	21.177	0.000**
TV	1.427	0.56	2	0.795	0.64	5	7.763	0.000**
Agriculture Officer	1.196	0.62	3	0.660	0.68	7	6.315	0.000**
Relatives	0.885	0.52	4	1.391	0.71	3	-6.165	0.000**
Radio	0.877	0.50	5	0.895	0.77	4	-0.210	$0.833^{N.S}$
Newspapers	0.771	0.51	6	0.442	0.85	9	3.847	0.000**
Friends	0.711	0.51	7	2.374	0.90	1	-19.217	0.000**
Private agencies	0.702	0.96	8	0.776	0.58	6	-0.779	$0.437^{N.S}$
Neighbors	0.688	0.98	9	1.458	0.82	2	-7.619	0.000**
Journals	0.546	0.84	10	0.305	0.64	10	2.608	0.009*

Scale: NA/Never = 0; Very occasionally = 1; Occasionally = 2; Frequently = 3

information for integrated pest management and pesticide related health hazards. Journals, neighbors, private agencies, friends, newspapers, radio and relatives were found to be least used as sources of information from bottom to top in rank order. Cotton growing male respondents informed that pesticide dealers were in direct and regular contact to them at their door and providing pesticides on credit bases in addition to the information and details about the pesticide usage therefore, they prefer the pesticide dealers for cotton crop consultation and Integrated Pest Management. While in case of cotton picker women, most of the respondents with mean vale ($\overline{X}$ = 2.37) were using their female friends as source of information about the pesticide related health hazards. Cotton picker respondents with mean value ($\overline{X}$ = 1.45) were availing their neighbors as source of information for the said purpose whereas, the respondents with mean value ($\overline{X}$ = 1.39) were consulting their relatives for the information about regarding pesticide related health hazards. Journals, newspapers and pesticide dealers were the least beneficial sources of information from bottom to top in rank order for the cotton picker women, because most of the cotton picker women were uneducated and it was not feasible for them to consult the pesticide dealers due to social and cultural barriers therefore, cotton pickers had no reliable or solid source of information.

CONCLUSIONS

The data mentioned above showed that almost 75% of cotton growing farmers i.e. pesticide consumers had orientation about side effects of pesticides, whereas cotton picker women had better orientation and knowledge about pesticide related health hazards. Data showed that cotton pickers (female) were having better orientation about the pesticide related health

hazards and diseases as compared to cotton growing farmers (male). Data also showed that most of the cotton pickers received information about pesticide related diseases from their friends and neighbours i.e. main source of information was chest to chest whereas in case of cotton growing farmers the sources of information were pesticide dealer and television. Therefore, it is depicted from the data that awareness of cotton growing farmers about pesticide related disease was from reliable sources whereas in case of cotton pickers was from their company and just oral tales. Therefore to educate the cotton growing community, scientifically training workshops are required to avoid the pesticide related health hazards in this community.

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