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Gender Differences in Knowledge, Attitude and Practices Regarding the Pesticide Use Among Farm Workers: A Questionnaire Based Study

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ABSTRACT

The extensive use of pesticides in agriculture sector possess a serious environmental degradation problem besides being associated with public and workers health hazards. It is important to understand gender difference in knowledge, attitude and practices regarding the pesticide use for identifying pesticide risks by gender and to recommend more gender-sensitive programs. However, very few studies have been conducted so far. This study, thus interviewed a total of 200 males and 120 females to assess gender differences on pesticide use knowledge, attitude and practices. Information was obtained through structured questionnaire coupled with personal interviews. The study revealed that more than 50% females had never been to school and only < 8% individuals were found trained in Integrated Pest Management. Almost all males and females did not drink and eat during pesticides application and also believed that pesticides are harmful to human health. However, there were gender differences regarding care of wind direction during spraying, prior knowledge on safety measures, reading and understanding of pesticides labels, awareness of the labels and protective covers. Almost all respondents were aware of negative impacts of pesticide use on human health and environment irrespective of gender; however, females were at higher risk due to lower level of pesticide use safety and awareness. It is strongly recommended to initiate gender-sensitive educational and awareness activities, especially on pesticide use practices and safety precautions.

Keywords: Pesticide use, Gender difference, Knowledge, Attitude, Questionnaire study

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INTRODUCTION

All over the world, it has been seen that the use of synthetic pesticides in agriculture is the most familiar way of controlling pests. The extensive use of such pesticides results in substantial health and environmental threats. According to WHO, 1990 “Pesticides use causes 3.5 to 5 million acute poisonings a year with roughly 20,000 workers dying from exposure every year”, most of them in developing countries. Some studies showed that the actual deaths may be around 300,000 [1-3]. Residues in air, water and foods, have led to much more concern over the undesirable effects on environment and human health [4].

Both male and female spray pesticides in India. Women farmers make up the majority of the total farming labor force in agriculture. This change in Indian society has changed the gender relation in farming households, especially pesticide use. The National Integrated Pest Management (IPM) Program is thus committed to provide women and men equal access to IPM training. Furthermore, Agricultural Perspective Plan also clearly states for equal participation of men and women in agricultural process. Studies done in other countries further showed that females experienced a significantly increased pesticides risk [5, 6]. The gender-sensitive research to address the women’s pesticide exposures is now needed for their betterment. Therefore, it is important to understand gender differences on pesticide use knowledge, attitude, and practice to identify the level of pesticide risk by gender and to recommend more gender sensitive awareness and training programs that not only help national IPM program but also help project staff at national, regional and district level for implementing such programs. This study tries to answer the following hypothesis: Is there a significant difference on knowledge and practices of pesticide use between males and females? Do males and females perceive similar negative externalities of pesticides use?

METHODOLOGY

Study Area

The study area targeted mainly the vegetable and cotton growing farm workers of Wardha District Maharashtra, where population heavily depends on agriculture for their livelihood. Information from 200 male and 120 female farm workers was collected for the research study through structured questionnaire and personal interviews.

Interview Questionnaire

The interview questionnaire was designed to elicit details on pesticide use knowledge, attitude and practices. The specific questions were, for example, care of wind direction at the time of spraying, knowledge on safety measures like long-sleeved shirt/pant or other clothes, individual habits like smoking, drinking or eating during spraying and shower and change of clothes after spraying, and individual knowledge on pesticides impact on different

environmental components, like human health, livestock, plant diversity and environment. The structured questionnaire was developed by literature review.

RESULTS

Socioeconomic Characteristics of Farmers in the Study Group

There were 16.5% males and 15.8% females of 21 years old. Additional 28% men and 31.6% women were 21–30 years old. Most of the males (30%) and females (45.8%) were 31–40 years old. There were 25.5% males >41 years old; however, only 6.6% females were >41 years old (**Figure 1**). More than one-fifth males had never been to school, 26.5% and 37% were under grade 5 and grades 6–10, respectively, and 14.5% were above grade 10. Whereas, More than half females had never attended school; additional 24% and 16.6% were under grade 5 and grades 6–10, respectively. Only 7.5% females were above secondary level. (**Figure 2**)

Figure 1- Age Distribution

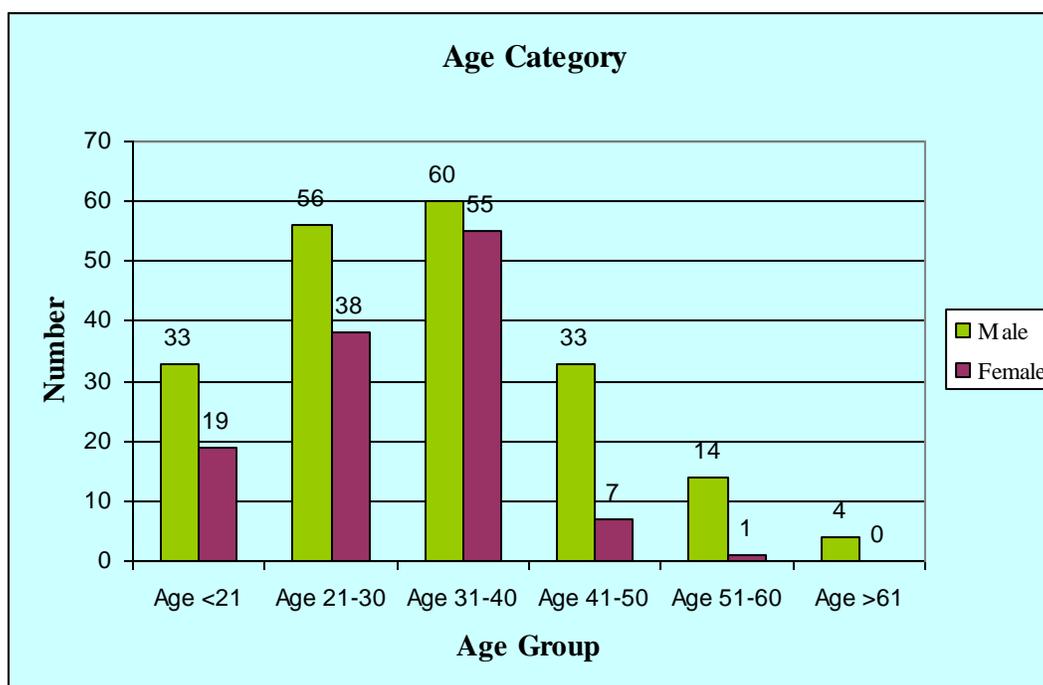
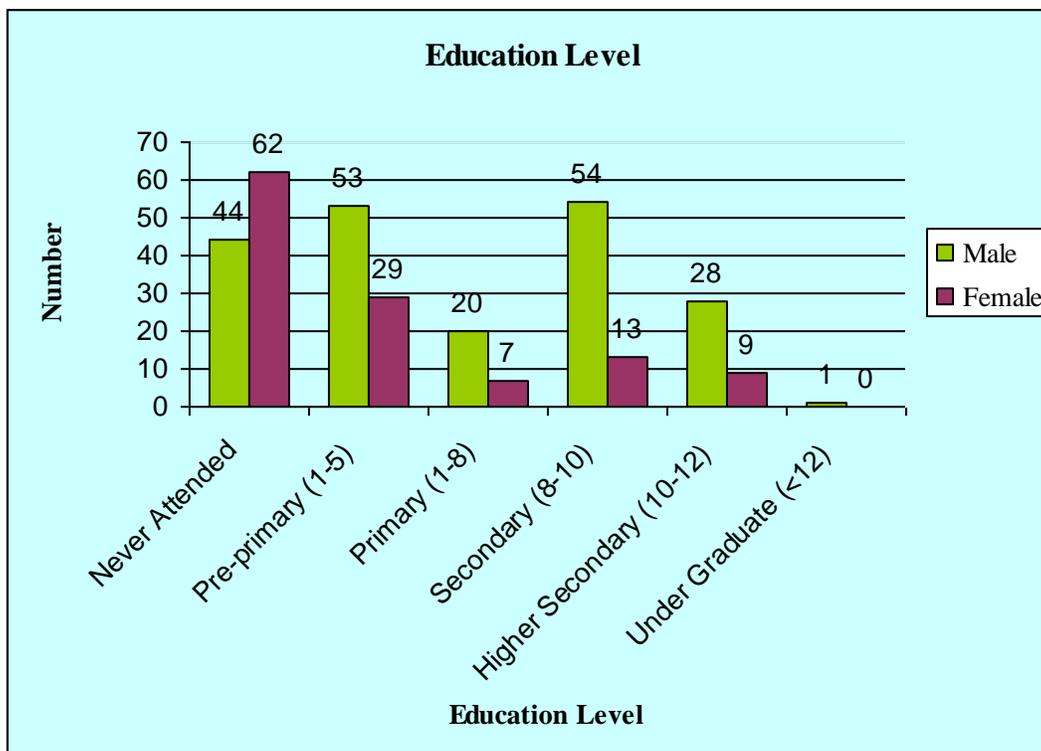


Figure 2- Education Level of Farm Workers



IPM training

In the study area, government and non-government organizations had already provided IPM trainings to some farm individuals. IPM trainings provide education for the social and environmental consequences of pesticide use. For this study, only 7 (6%) females and 23 (7%) males were IPM trained.

Pesticide Use Knowledge, Attitude and Practices

Gender differences on pesticide use knowledge of the individuals are given in **Table 1**. Males dominated the decision on pesticides to be used in the household. Similarly, gender differences were observed in the care of wind direction while spraying, prior knowledge on safety measures, reading and understanding of pesticides labels and awareness of the pesticides labels. Nearly 80% of males decide themselves on types, doses, frequency and timing of pesticides to be used, which is only 33.4% for females. One-third of males and nearly half of females do not account wind direction during spraying pesticides. Prior knowledge on pesticide use safety measures was extremely lacking—63% of males and 75.8% of females do not have knowledge on pesticides safety measures such as use of mask, gloves, aprons, full sleeve clothing etc. Similarly, 47% of males and 75% of females could not read and understand the icon of pesticides labels present in containers. Furthermore, 38% males and 64.2% females were not aware of the pesticides labels.

Almost all males and females did not drink and eat during pesticides application (**Table 2**). A total of 42% males and 51.7% females have not had shower after sprays. However, cent percent males and females wash their hands with soap after handling pesticides. A total of 22% males and 30.8% females wear the same cloth continuously that was used in the spraying operation. Similarly, nearly half females and 38% males used pesticide-contaminated utensils for other purposes, for example in latrine, livestock and in kitchen. Even though very few individuals had separated body covers (like long-sleeved shirt, pant, shawl, sari, etc.) for spraying purposes, a significant relation was found between gender and body covers.

There was a weak correlation among pesticides effect on human health, livestock, plant diversity and environment to gender (**Table 3**). Almost all males and females were aware of the negative externalities of pesticide use. More than 95% males and females accepted that pesticides are harmful to human health and livestock. 70% females and 78% males believed that pesticides harm plant diversity. Interestingly, only 13% males and females have not accepted that such toxic chemicals are harmful to their environment.

Table 1- Gender Differences in Attitude and Practices of Pesticide use		
	Male	Female
01. Decides for the use of pesticides in the household		
No	40 (20%)	80 (66.6%)
Yes	160 (80%)	40 (33.4%)
02. Care of wind direction while spraying pesticides		
No	66 (33%)	54 (45%)
Yes	134 (67%)	66 (55%)
03. Previous knowledge on pesticides use safety		
No	126 (63%)	91 (75.8%)
Yes	74 (37%)	29 (24.2%)
04. Read and understand toxic label present in the pesticide containers		
No	94 (47%)	90 (75%)
Yes	106 (53%)	30 (25%)
05. Awareness of the toxic label present in the pesticide containers		
No	76 (38%)	77 (64.2%)
Yes	124 (62%)	43 (35.8%)

Table 2- Females and males averting activities against pesticides use		
01. Eating while spraying pesticides		
No	196 (98%)	120 (100%)
Yes	4 (2%)	0 (0%)
02. Drink while spraying pesticides		
No	196 (98%)	119 (99.2%)
Yes	4 (2%)	1 (0.8%)
03. Shower after spraying pesticides		
No	84 (42%)	62 (51.7%)

Yes	116 (58%)	58 (48.3%)
04. Change cloths after spraying pesticides		
No	44 (22%)	37 (30.8%)
Yes	156 (78%)	83 (69.2%)
05. Washing hands with soap after handling pesticides		
No	1 (0.5%)	0 (0%)
Yes	199 (99.5%)	120 (100%)
06. Use of utensils for other purposes that were used for making sprays		
No	124 (62%)	62 (51.7%)
Yes	76 (38%)	58 (48.3%)
07. Had long-sleeved body cover for spraying (shirt)		
No	166 (83%)	113 (94.2%)
Yes	34 (17%)	7 (5.8%)
08. Had long-sleeved body cover for spraying (pant)		
No	172 (86%)	115 (95.8%)
Yes	28 (14%)	5 (4.2%)

Table 3- Individuals' knowledge on pesticides impacts		
01. Pesticides affect human health		
No	6 (3%)	2 (1.7%)
Yes	194 (78%)	118 (98.3%)
02. Pesticides affect livestock		
No	14 (7%)	6 (5%)
Yes	186 (93%)	114 (95%)
03. Pesticides affect plants diversity		
No	44 (22%)	36 (30%)
Yes	156 (78%)	84 (70%)
04. Pesticides affect your environment		
No	26 (13%)	16 (13.3%)
Yes	174 (87%)	104 (86.7%)

DISCUSSION

This study found that the age does not affect males for pesticides spraying, whereas females less than 40 years old only spray pesticides. Female illiteracy is higher than the male illiteracy. IPM,

somewhat labor-intensive, not only tends to generate high yields and high net returns but also minimizes pesticide use and reduces health, environmental and social costs of pesticide pollution through optimum pesticide use and safety [7,8,9]. The present study, however, found that very low number of farmers had been trained on the IPM. Significant

relationships between gender and (i) decisions of pesticides use in a household, (ii) wind direction, (iii) prior knowledge on safety precautions, (iv) knowledge on icons of pesticide danger and (v) awareness of pesticides labels were observed. This may be due to male domination of household resources. Furthermore, this is probably because the male population is more mobile, whereas the female population is traditionally more confined to the household. Compared with females, males seemed to be better knowledgeable; however, by any international standard, both males and females had very low level of knowledge. Some studies [10-14] from developing countries have shown nearly similar results, especially on pesticide use knowledge and protective measures, because of the fact that most users in such nations are illiterate, ill-trained, poor and subsistent. Easy availability of pesticides in local market because of lack of implementation of pesticide rules and regulations, unwillingness to risk economic losses due to poor economic conditions and low share of pesticides on total produce due to cheap price of pesticides further exacerbate the situation. The first and foremost way to overcome such difficulties is to educate population; however, education is not the only way. Awareness is another way. An educated individual may know the health and environmental impacts due to pesticide use, but would not be aware of wearing protective clothing due to either poor economic conditions or hot climates. Therefore, an integrated approach is needed for the safe and optimum use of pesticides and concurrent betterment of human life, which not only includes socio-economic development, but also the environment as a whole.

CONCLUSION

Though the level of education is low, there is a high level of knowledge regarding the negative impacts associated with pesticides. However, male workers dominate the decision on pesticides to be used, takes care of wind direction while spraying, had prior knowledge on safety measures and could read, understand and be aware of pesticide labels present in the containers. Therefore gender-sensitive educational and awareness activities, especially on pesticide use practices and safety precautions should be initiated. For this, education and training programs should be conducted at frequent intervals. Emphasis should also be given to the Community IPM program, immediately for the most intensified areas, and slowly for other parts where agricultural intensification is taking place. Pesticide issues will only improve if the population is better educated/trained on the basic and fundamental aspects of pesticide use and safety measures.

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