International Journal of Theoretical & Applied Sciences, 9(2): 31-34(2017)

ISSN No. (Print): 0975-1718
ISSN No. (Online): 2249-3247

Effect of Pesticides on Health of Agricultural Farm Female Workers in Ghatanji Region of Yavatmal District, Maharashtra

Abhay Patki
Department of Zoology, S. P. M. Gilani Arts, Science and Commerce College, Ghatanji, District Yavatmal, Maharashtra- 445 301, INDIA

(Corresponding author: Abhay Patki)
(Received 17 July, 2017 accepted 17 August, 2017)
(Published by Research Trend, Website: www.researchtrend.net)

ABSTRACT: Present study deals with the effect of various pesticides on the female working in agriculture field in Ghatanji region of Yavatmal district of Maharashtra to ascertain the variety of pesticides that are used in the agriculture sector and their probable impact on the health of farm female workers. Agriculture being the principle occupation in the country exposes a considerable proportion of population to this occupational related hazard. One such hazard is the pesticide exposure. Pesticides/insecticides are used to protect crops from the ravages of pests and diseases and in the vector control program. These substances are environmental toxins. Guided by commercial motives, farmers are using more and more pesticides to protect their crops. A large number of agricultural female workers along with family members are being exposed to various pesticides. The general population is exposed to pesticides through the food chain. Various symptoms and signs of diseases, physiological disorders were observed and the relative risk was also observed to be high. Lack of adoption of adequate protective measures were noticed to have increased the declining state of the health of female working in farms of Ghatanji region of Maharashtra.

Keywords: Pesticides, Ghatanji, Female worker, Agriculture

I. INTRODUCTION

Pesticide use and exposure among women is a central issue in the move towards a sustainable future. These substances are environmental toxins which have been defined as "chemical compounds that are created and dispersed into the environment specifically in order to kill living creatures known as pests, be they insects, weeds, bacteria, fish, snails, birds, rodents or other forms of life (Miller, 2004: Sadeghi *et al*., 2015)." Approximately 2.5 million tons of 600 different pesticide chemicals applied annually. Throughout the world, Farmers and workers frequently are exposed to dangerous pesticides directly when working as pesticide applicators, or indirectly during harvesting, planting and soil preparation. In addition, agriculture mortality rates may be underreported and have remained consistently high in the last decade, in contrast to other dangerous occupations (García, 2003).

Research on pesticide-related health effects has been mostly focused in industrialized countries and in men. Many studies have found a relationship between pesticides and male fertility, including effects on sperm health and longer time to pregnancy. However, few studies have examined how pesticide exposure might affect women's ability to get pregnant (Subashiny and Thiruchelvam, 2008). Women now play a significant role in the agricultural labor force worldwide. Women farmers working as partners in farming operations are often undercounted because usually the husband is considered the main operator. Relatively few studies have analyzed specific farm activities to pinpoint the extent of exposure by gender. Women are exposed to pesticides not only through agricultural activities but also from exposures in the home, school, workplace and in public spaces. Some pesticides threaten not only the health of women agricultural workers, but also affect children because of teratogenic or embryo-toxic effects. In addition, domestic exposures can also be widespread due to non-agricultural pesticide use in many areas. . In addition, pesticide residues have been found to remain in the daily diet on fruits and vegetables even after they have been washed, peeled, or cored. Many pesticide products are not labeled; but even if they are, many women in rural areas are illiterate and would not be able to read the information. Many women agricultural workers are unaware of all of the adverse effects of pesticide use.

Even where they are aware of the problems few understand about specific adverse effects and most described ill-effects in general or vague terms. Most users do not use protective clothing because it is unsuitable for the climate, unavailable or too expensive. Studies of women in Asia have found that they often are unaware of the existence of such equipment (Harley *et al*., 2008).

United Nations Environment Protection agency reported that nine of the twelve most unwanted persistent organic pollutants are pesticides used in agriculture crops and for public health vector control programme. Pesticide exposure may be linked to health problems. Respiratory, gastrointestinal, ocular and dermal problems were observed Women play a significant role in the agricultural labor force worldwide. The United Nations reports that nearly 80% of economically active women in sub-Saharan African and at least half in Asia are now working in agriculture. Women are increasingly exposed to pesticides in developing countries, where women's poisoning and other pesticide-related injuries seem to be greatly underestimated. Many of the effects of pesticides in human health will be the same for men and women, but not always. Women farmers working as partners in farming operations are often undercounted because usually the husband is considered the main operator (WHO, 2000). Women farmers and workers frequently are exposed to dangerous pesticides directly when working as pesticide applicators, or indirectly during harvesting, planting, and weeding and soil preparation. Current problems include the fact that many women agricultural workers are unaware of all of the adverse effects of pesticide use. Even where they are aware of the problems, few understand about specific adverse effects and most described ill-effects in general or vague terms. They work without the appropriate personal protective equipment. Personal hygiene was lacking in that many workers commonly ate and drank without previously washing their hands. Many times, pesticides are stored in the home in areas easily accessible to many family areas. Often women cannot read labels and do not follow instructions. The menstrual cycle is a hormonally controlled process, although several factors may influence its length and regularity. Menstrual cycle characteristics may have implications for women's fecund ability and risk of hormonally related diseases. Parkinson's diseases has also been related to pesticide exposure by Akbari *et al.,* 2015. Certain pesticides disrupt the estrous cycle in animals. Studies have shown a link between a variety of reproductive health impacts in women and pesticide exposure. Studies have documented increased incidence of miscarriages, stillbirths and delayed pregnancy among women agricultural workers and wives of men employed in pesticide mixing and spraying. Other recorded health effects from research with women in the field include acute effects such as dizziness, muscular pain, sneezing, itching, skin burns, blisters, difficulty breathing, nausea, and sore eyes (Schetler, 1997).

These environmental contaminants may disrupt reproductive hormones or affect the ovary; however, biologic mechanisms for these associations are still under study. Therefore, we examined the cross-sectional association between currently used pesticides, specifically focusing on probable hormonally active pesticides, and menstrual cycle characteristics among premenopausal women working in the agricultural fields.

II. MATERIALS AND METHODS

The study area selected is the villages near Ghatanji city, where the women work as a labor in the fields around their villages. The nature of their work is deseeding, soil preparation, sowing, harvesting etc. They work in farm for specific periods, from July to September, not all the year and work in the vicinity with the crops. The crops in this region are generally cotton, Soybean, pulses, wheat, etc. Maximum farmers use pesticides in farming which are sprayed by men and entry in these fields is avoided for few days. After that women's work therefore about 6-8 hours daily. Women's are directly interviewed as well as Questionnaires contained questions on farming practices, demographic characteristics, general health and reproductive health. The current study is based on the responses of female worker characteristics of the female study population aged 21–40 years from the Agricultural Health Study. Five menstrual cycle characteristics: short cycles, long cycles, irregular cycles, not experiencing a period for more than 6 weeks in the last 12 months (missed period), and bleeding or spotting between periods in the last 12 months (inter-menstrual bleeding). Short periods were defined as 24 days or less. Long periods were defined as more than or equal to 36 days. On the basis of results from a previous analysis of menstrual cycles in the Agricultural Health Study, age, body mass index, education, age at menarche, cigarette smoking, Graves' disease, medically treated depression, and diabetes were identified as possible confounders of an association between pesticides and menstrual Number and percentage of women aged 21–40 years with different menstrual cycle lengths reporting missed periods and inter-menstrual bleeding. Women who had never used any pesticides were considered the unexposed group for analyses on pesticide exposure (London, 2002).

III. RESULTS AND DISCUSSION

The mean age of the women were 20 to 40 years, and the mean length of time they had lived or worked on a farm was 20 years and the majority had been educated beyond high school. Women who reported experiencing short cycles had fewer reports of missed periods and more reports of inter-menstrual bleeding than women with cycles 25–35 days in length. Women whose menstrual cycles were long or irregular had more reports of missed periods and inter-menstrual bleeding than women with cycles 25–35 days in length (Table 1).

Table 1: Age of respondance.

Age	Number of female workers (Frequency)
< 20	21
21- 24	18
25- 29	32
30- 34	16
35- 40	22
Total	109

Studies have examined pesticide exposures and menstrual cycle function in human populations. Other environmental and occupational exposures such as polychlorinated biphenyls, dioxin, and other solvents (Boston, 1987) have been associated with changes in menstrual cycle length and flow. On the basis of toxicology studies, there is speculation that these environmental contaminants may disrupt reproductive hormones or affect the ovary; however, biologic mechanisms for these associations are still unknown. Long cycles, irregular cycles, missed periods, and intermenstrual bleeding were associated with infertility in this population. Other studies have found associations between pesticide exposure and reduced fecundability in women. However, none of these studies also examined menstrual function. Women are increasingly exposed to pesticides in developing countries, where women's poisoning and other pesticide-related injuries seem to be greatly underestimated. Many of the effects of pesticides in human health will be the same for men and women, but not always. Some organochlorine pesticides have been related to breast cancer in post-menopausal women. However, knowledge about other pesticides is much more limited. Epidemiological studies assessing maternal exposure to individual pesticides and abortion, fetal death, or congenital defects are not conclusive, although some suggestive associations have been observed. However, women who reported occupational exposure to currently-used pesticides were 30 percent less likely to conceive in any given month than women without occupational exposure (Harley *et al*, 2008). There is also evidence of increased risk of birth defects from parental exposure to pesticides, although the extent of this risk is uncertain. Specific herbicides, such as 2, 4-D and 2, 4, 5-T, disrupt estrogen cycles in women and can cause menstrual-cycle problems in animals. Carbonate and organophosphate insecticides have been reported to increase birth prematurely and spontaneous abortion rates. Other pesticides such as aldrin, dieldrin, chlordane and toxaphene can also disrupt reproduction hormonal cycles. Other recorded health effects from research with women in the field include acute effects such as dizziness, muscular pain, sneezing, itching, skin burns, blisters, difficulty breathing, nausea, nail changing color and sore eyes. Some studies have suggested possible links between farming and agricultural-related pesticide exposures and autoimmune disease. A March, 1993 EPA report stated that 2,4-D contained deadly dioxins, which are stored in fatty tissue, causing cancer, birth defects, miscarriages and reduced fertility . Our findings, along with results from toxicology studies, suggest that use of certain hormonally active pesticides may affect menstrual cycles. Many studies have examined the risk of infertility or poor semen quality among men exposed to pesticides; however, few have examined the effect of pesticide exposure on women's reproductive health (Farr, 2004). Chemical pesticides are known to have deleterious effects on human health and the environment (Avasthi *et al.,* 2010). During the past three decades, indiscriminate use of chemical pesticides in agriculture has created serious health and environmental problems in many developing countries (World Resources, 1999). Various studies in Nepal (Dahal, 1995; Pujara and Khanal, 2002; Atreya, 2007) reported the massive use of chemical pesticides in vegetable growing areas that raised issue of possible health risks. Pesticide pollution not only affects human health, but also other ecological assets, such as soil surface and ground water, micro and macro flora and fauna, etc. (Pimental, 2005).

Future research should include detailed menstrual cycle and pesticide exposure data to further elucidate the association between pesticide exposure and menstrual cycle characteristics.

IV. CONCLUSION

Gender-sensitive research is needed to properly address the study of women's pesticide exposures and related adverse outcomes. A better understanding of potential gender-environment and sex-environment interactions related to pesticide exposure and health effects in women is needed. Recommendations that there should be increased public awareness of sustainable agriculture in women's. Reduced use of agricultural chemicals" and train women's groups, farmers and extension agents in alternative non chemical ways of controlling pests are of significance.

REFERANCES

[1]. Akbari, Ramin Sara Nosrati, Maral Salek Maghsoodi, Siamak Alizadeh and Seyed Mahdi Hosseiniyan Khatibi (2015). The role of pesticides in Parkinson disease and Integrated Pest Management. *Biological Forum – An International Journal* **7**(2): 318-321.

[2]. Avasthi Shubhi, Ajay K. Gautam and Rekha Bhadauria (2010). Antifungal activity of plant products against *Aspergillus niger*: A potential application in the control of a spoilage fungus. *Biological Forum — An International Journal*, **2**(1): 53-55.

3]. Boston, M. A., (1987). Teratogenesis, Carcinogenesis and Mutagenesis, *Chapell Publication, Germany*, **7**: 527-540.

[4]. Farr, S. L., Cooper, G. S., Cai, J., Savitz, D. A., Sandler, D. P., (2004). Pesticide Use and Menstrual. Cycle Characteristics among Premenopausal Women in the Agricultural Health Study. *American Journal of Epidemiology,* **160**(12): 1194-1204.

[5]. García, A. M., (2003). Pesticide exposure and women's health. *Am J Ind Med.,* **44** (6): 584- 94.

[6]. Harley, K. G., Marks, A. R., Bradman, A., Barr, D. B., Eskenazi, B. (2008). DDT exposure, work in agriculture and time to pregnancy among farm workers in California. *International Journal of Occupational and Environmental Medicine,* **50**(12): 1335-1342.

[7]. London, L., de, G. S., Wesseling, C., Kisting, S., Rother, H. A., Mergler, D., (2002). Pesticide usage and health consequences for women in developing countries: out of sight, out of mind. *International Journal of Occupational and Environmental Medicine.,* **8**(1): 46- 59

[8]. Miller, G. T., (2004). Sustaining the Earth. 6th Edition. Thompson Learning, Inc., Pacific Grove.

[9]. Sadeghi Maryam, Soleiman Rasouliazar and Nouraldin Shayesteh (2015) The Investigation and Analysis of the Required Management Skills in Using Pesticides in Farms (A Case Study in West Azerbaijan Province). *Biological Forum – An International Journal* **7**(2): 48-55(2015)

[10]. Schetler, T., (1999). Generations at Risk, Physicians for Social Responsibility, Calpirg Publication, New York, P. 66.

[11]. Subashiny, N., Thiruchelvam, S., (2008). Knowledge of Farmers about Pest Management Practices in Pambaimadu, Vavuniya District: An Ordered Probit Model Approach. *Sabaramuwa University Journal*, **8**, 79-89.

[12]. World Health Organization (WHO), (2001). United Nations Environmental Program, Public Health Impact of Pesticides used in Agriculture, Geneva.