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EFFECTS OF PESTICIDES ON WOMEN AND CHILDREN

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ABSTRACT

Environmental pollution by pesticides has been predictable in biotic and abiotic components. These tireless organic pollutants are lipid soluble, non-biodegradable, and endocrine disrupters. The aim of this study is to evaluate the effects of exposure to pesticides by women and children, which has caused a tremendous health related issues amongst women and children. The present study was therefore planned to determine whether the levels of these pesticides like DDT and its metabolites DDT and DDE, dieldrin, heptachlor, and HCH and its isomers (a, h, and g) affects the life of women and children.

Keywords- DDT/DDE, children, exposure, pesticides, women.

I.INTRODUCTION

Pesticides, human health, and security of the environment have been of global worry. The major menace of contamination is by the organochlorines as they are lipid solvable and non-biodegradable. Organisms at the top of the food chain are most harmfully affected as these pollutants add in maximum quantity in them through a process of bio magnification. These chemicals are carcinogenic, mutagenic, and teratogenic and are also reported to possess estrogenic activity [1]. The effect of various industrial chemicals and other environmental pollutants in varying human endocrine systems has drawn public consideration. Over the years, chemicals with estrogenic properties when controlled chronically at high levels or when present in unphysiological amounts for long periods helped mammary gland carcinogenesis in experimental systems and growth of estrogen-responsive human breast cancer [2]. Pesticides that are chemically comparable to one another cause the same type of harmful belongings to humans. These effects may be slight or severe, contingent on the pesticide complex and the amount of overexposure. But the pattern of illness or injury caused by each chemical group is usually the same. Some pesticide chemical relations can cause both external irritation injuries and internal poisoning infections. pesticides are highly toxic to humans; only a few drops in the mouth or on the skin can root extremely harmful effects. Other pesticides are less toxic, but too much exposure to them also will cause harmful effects. Pesticide exposures of women in developing countries are intensified by economic policy changes related with structural change programs and globalization. Women in these countries, mainly in the agricultural sector, are progressively exposed. Since they are concentrated in the most fringe positions in the formal and informal workforces, and production is prepared in a gender-specific way, chances for women to

control their exposures are limited. Data from developing countries show that: 1) women's exposures to pesticides are significantly higher than is recognized; 2) poisonings and other pesticide-related injuries are significantly underestimated for women; 3) for a given opposing outcome from exposure, the knowledge of that outcome is gender-discriminatory; 4) mistaken risk perception increases women's exposures. The pause in knowledge of gender-specific exposures and effects is related to gender prejudices in the nature of epidemiologic review and in the literature, and the gendered nature of health workers' practices and investigation. Endorsements are made for strong, independent organizations that make available opportunities for women to control their environments, and the factors disturbing their health, as well as gender-sensitive research to address the accuracies of women's pesticide exposures.

II.DEFINITION OF PESTICIDES

As per Food and Agriculture Organization (FAO); Pesticide is any ingredient or mixture of substances planned for preventing, destroying or controlling any pest, including paths of human or animal disease, uninvited species of plants or animals causing harm during or otherwise interfering with the production, processing, storage, transport or marketing of food, agricultural commodities, wood and wood products or animal feedstuffs, or substances which may be managed to animals for the control of insects, arachnids or other pests in or on their physiques, also included are substances intended for use as a plant growth regulator, defoliant, desiccant or agent for withdrawing fruit or preventing the premature fall of fruit and substances applied to crops either before or after harvest to protect the service from worsening during storage and transport[3].

2.1 Groups of Pesticides Based On the Target Organism

Type of pesticide group	Target pest
Algaecides or algaecides	Algae
Avicides	Birds
Bactericides	Bacteria
Fungicides	Fungi
Insecticides	Insects
Miticides or acaricides	Mites
Molluscicides	Snails
Nematicides	Nematodes
Rodenticide	Rodents
Herbicides	Unwanted plants

2.2 Groups of pesticides based on chemical composition

Insecticides	Herbicides	Persistent organic pollutant
Dieldrin/Aldrin: Organochlorine	atrazine: triazine	PCBs
Heptacholar: Orgnochlorine	2,4,5 TP: auxin	Dioxin
Ddt/dde: Organochlorine		DDT/DDE
Malathion: Organchlorine		

2.3 Di-Chloro-Di-Phenyl-Trichloro-Ethane (DDT/DDE)

DDT was one of the most broadly used insecticide in the world, successful in annihilation of malaria from USA and other countries, however at an expense of overwhelming environmental problems and human health hazards. Several case control studies have shown an association between blood DDT/DDE levels and development of Breast distortion. Cohn. BA et al. carried out a prospective, nested case control study to analyze the relation between age of exposure to DDT and successive breast cancer incidence later in their life [4]. In that study 129 cases developed breast cancer by the age of 50 years as opposed to 129 controls ($p = 0.02$). It was settled that women who are exposed to DDT and its metabolites in early half of their puberty (first 14 years of women's life) have 5 fold more risk of having breast cancer later in their life than those women who had same amount of exposure after first 14 years of their life [5]. Retrospective case control studies by Charlier et al. show that certain pollutants like DDT and its metabolites are present inconsequentially higher concentration in women with breast cancer when associated to the control group [6]. A case control study to analyze the relationship between DDT levels, lactation history and breast cancer incidence, by Romieu et al. deduced evidence of dose response relationship of breast cancer with DDE in serum (highest compared with lowest quintile OR = 3.81; 95% CI, 1.14 - 12.8) [7]. In a hospital based case control study by Demers et al. to investigate the relation between blood DDE levels with staging and grading of tumor, a positive correlation was found between increased amounts of DDE and its metabolites with hostile tumors with lymph node connection indicating that DDT/DDE might worsen malignancy of mammary glands, if not initiate it [8].

III.EXPOSURE

When a pesticide contacts a surface or organism, that contact is called a pesticide exposure. For humans, a pesticide exposure means getting pesticides in or on the body. The toxic effect of a pesticide exposure depends on how much pesticide is involved and how long it remains there.

3.1 Types of exposure

Pesticides contact your body in four main ways:

- Oral exposure (when you swallow a pesticide),
- Inhalation exposure (when you breathe in a pesticide),
- Ocular – (through the eyes), or
- Dermal (through the skin)

3.2 Avoiding Exposure

Avoiding and decreasing exposures to pesticides will lessen the harmful effects from pesticides. You can avoid exposures by using protection systems, such as closed systems and enclosed cabs, and you can reduce exposures by wearing suitable particular protective equipment (PPE), washing exposed areas repeatedly, and keeping your particular protective equipment clean and in good functioning condition.

IV.EFFECTS ON CHILDREN

Children may be specifically sensitive to the health risks of pesticide exposure as their internal organs are not fully developed. For example, their immune systems may not be capable to protect them against pesticides and their excretory systems may not be able to excrete these chemicals. Pesticide exposure may also permanently disturb development negatively by obstructing the absorption of nutrients required for development. Children's behaviors also put them at great risk. They crawl on floors and play on lawns—places where pesticide remains collect—and put objects into their mouths. They drink more milk, applesauce, apple and orange juice—foods that may have high pesticide loads— per pound of body weight than adults. Children are not just small adults. Because their bodies and minds are still developing, children are more susceptible than adults to the effects of pesticides and other environmental hazards. This was emphasized in the National Research Council's report "Pesticides in the Diets of Infants and Children." Yet even today, many risk charges for environmental agents still fail to fully account for risks in children [9]. In 2015, WHO found that there was sufficient evidence of carcinogenicity in experimental organisms to classify glyphosate, the active ingredient in the utmost popular lawn care brand (Roundup) as "probably carcinogenic to humans" (Group-2A). WHO also found that 2,4-D-found in many 'weed and feed' products- is probably carcinogenic [10]. Studies show that children living in households where pesticides are used undergo high rates of leukemia, brain cancer and soft tissue sarcoma [10].

V.EFFECTS ON WOMEN

Clearly pesticides position health risks for women. In overall, most pesticides have not been sufficiently tested for safety. Pesticide exposure is one of the most commonly studied occupational risk factors, with the United Nations Environment Program estimating that unintentional pesticide poisoning causes 20,000 deaths and 1 million cases of infection per year worldwide. Pesticides have been concerned in human studies with leukemia, lymphoma, aplastic anemia, soft tissue sarcoma and cancers of the breast, brain, prostate, testis and ovaries. The International Agency for Research on Cancer has found "sufficient" evidence of carcinogenicity in eighteen

pesticides and "limited" evidence in a supplementary sixteen pesticides. Studies have shown a connection between a variety of reproductive health impacts in women and pesticide exposure. Studies have documented increased occurrence of miscarriages, stillbirths and overdue pregnancy among women agricultural workers and wives of men working in pesticide mixing and spraying. There is also indication of increased risk of birth imperfections from parental exposure to pesticides, though the extent of this risk is undefined [11].

VI.CURRENT PROBLEMS

- In numerous countries, there pesticides are stockpiled in the home in areas easily accessible to many family spaces.
- Agriculture inclines to be excluded from many national labor laws and is not theme to any inclusive international standard. Where regulations exist, they are often intermittently applied due to inadequate lawful provisions, low levels of unionization and inadequate labor inspection.
- Frequently women pesticide applicators cannot read tags and do not follow directions.
- Most operators do not use protective clothing because it is unfitting for the climate, unavailable or too costly. Studies of women in Asia have found that they often are ignorant of the existence of such equipment.
- In many agricultural sites there are no washing facilities in the field where workers spray pesticides, and workers infrequently wash even when pesticides spill on their skin.
- In Africa there are reports that rural women often salvage pesticide containers for storing or transporting their crops.

VII.MINIMIZING THE NEGATIVE IMPACT OF PESTICIDES

Many governments have insufficient legislation regarding problematical pesticides and herbicides. Where the governmental framework is in place, there is regular weak implementation capability. The sustainability of occupational health and safety structures and functions in developing countries is also a principal concern. Refinement of women's knowledge in traditional alternate farming, has also repeatedly been overlooked. Rural women in many parts of the world have fewer chances to unite themselves, lack the political influence to demand changes and are habitually powerless to control resources.

Despite continuing deviations over the degree of risk posed by pesticides, it appears that people have become progressively concerned about pesticide use and mainly about their impacts on human health and environmental quality [9]. These increased concerns caused mainly from reduced trust in the agricultural and industrial methods of production as well as on the authority's regulations pointed at protecting both the environment and human health. Therefore, considering the being of several doubts in the evaluation of pesticide safety, scientific data, policy guidelines, and professional decision must be unified when estimating whether a pesticide can be used positively within the limits of an acceptable risk. The probability of reducing the environmental risk connected with the pesticide use is very low because the producers believe that lowering risk implies either decreased output or increased input resulting by the replacement for the pesticide inputs [12].

Concerns about effects of pesticide use on human health and the environment led the EU to advance a 'Thematic Strategy on Sustainable Use of Pesticides' [13]. Besides, agricultural scientists started to cultivate

alternative crop management systems to lessen the negative effects of farming (built mainly on pesticide use for crop protection) to the environment and to human health. In precise, the Integrated Crop Management (ICM) includes strategies to be used by the farmer unions to implement actions for production of harmless agricultural products with concurrent respect to the environment [14,15-17]. In addition, ICM includes measures for enactment of good agricultural practices (GAP), the safety and hygiene of workers, the safety of the products, the full traceability of the measurements, and exact actions for the preservation of the environment [18].

VIII.CONCLUSION

In spite of efforts by environmental controlling authorities to monitor the health effects of exposure to pesticides, various women and children get exposed to these harmful chemicals each year. With the shocking rise of unsafe practices in agriculture the rate of this exposure is also mounting each year. There has been increasing evidence of link between pesticide use and occurrence of breast cancer and children health related issues across the world.

8.1 Actions to Take at the Individual Level

• Disregard all pesticide use for cosmetic purposes in the home and yard. In specific, eliminate all calendar-based pesticide use, as well as weed killers.

• Practice cohesive pest management at home. Cohesive pest management is a comprehensive, common-sense, and cheap approach to pest management that emphasizes preventing pest infestations and minimizes use of toxic chemicals.

- Prevent infiltrations by carefully maintaining household structures such as screens, foundations, doors, faucets, and drains.
- Trim plants and shrubs to keep them at least one foot away from buildings.
- Remove loads of scrap wood, mulch, or leaves from around the outdoor of the house.

• Wash all fruits and vegetables before cooking or eating. Studies show that up to 90% or more of many pesticide residues on the surface of foods can be removed by unpeeling or discarding outer leaves and carefully washing with hygienic water and a scrub brush [19]. Some foods, though, have been treated with systemic pesticides that cannot be removed by washing.

- Drain standing water and wear protective clothing to avoid mosquitoes [20].
- Limit food to kitchen and dining areas.
- Clean cooking and eating areas often and store foods in pest-proof containers.
- Dispose of trash regularly and frequently.
- Use chemical pesticides ONLY as a last option for serious infestations.

8.2 Actions to Support at the Community Level

• Advocate for unified pest management in all school buildings, pre-kindergarten through university, as well as daycare centers, playgrounds and parks, and public buildings [21].

• Cultivate programs to reward landlords for practicing integrated pest management with local recognition, free advertising, or certificates of merit [22].

• Maintain on prior notification of pesticide use in or around public schools, public buildings, utility easements, etc. Support mandatory neighborhood notification laws at the city, and state level.

• Inspire institutions that feed children to offer organic foods, especially fruits and vegetables.

• Lobby local grocers to carry organic foods

8.3 Actions to Advocate at the State/Federal Level

• Advocate for child-protective pesticide laws and regulations.

- Support strict application of the Food Quality Protection Act.
- Support a federal School Environmental Protection Act.
- Support international treaties to limit persistent organic pollutants.

• Advocate for strong biomonitoring and environmental public health pursuing programs

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