



Assessing Qualifications, Knowledge and Work Experience of Sales Personnel on Safety Measures of Pesticides In Wad Medani, Sudan.

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Abstract

The agricultural private sector in Sudan has emerged during the last two decades. It involves personnel that deliver extension services and considered as an alternative to the public extension. Many studies in Sudan have shown that farmers rely on retailers to buy pesticides and get information including use instructions without assessing the qualifications, knowledge and work experience of retailers on safety measures of pesticide. This study, therefore, intended to assess qualifications, knowledge and work experience of sales personnel on safety measures of pesticide in Wad Medani Central Agricultural Inputs Market, Gezira State, and Sudan that will help to avoid the adverse impacts of incorrect handling of pesticides on the environment and human health in the country. The study employed a field survey with questionnaire methodological procedure applied in guiding data collection. Descriptive statistics and the chi-square test were used to analyze and interpret the collected data. The results revealed that all sales personnel (100%) hold bachelor degree in different agricultural specializations, the majority of them (57%) are male, nearly (57%) of them have the period appointment from 1 -5 years, the majority of them (84%) display pesticide packages on shelves, store pesticides in stores, store pesticides on the ground and nearly (47%) of farmers obtained information from pesticide sellers in the market. The chi-square test showed a significant association between the education and period of appointment of the sales personnel and the majority of the selected safety measures of pesticides studied. It can be concluded that the agricultural private sector suffers from some obstacles that need solutions to be able to play its role more better, especially store specifications and training of sales personnel in both process and human how skills and technical skills which are necessary for their work. Therefore, we recommend that the stores should be built according to the required specifications, along with the training sales personnel during their service, in both process and human how skills and technical skills which are necessary for their work and further agricultural extension researches should be conducted in this research area.

Keywords:

Agricultural private sector, Sales personnel, Pesticides; Gezira State; Sudan

1.Introduction

Pesticides may pose risks to man and his environment starting from their manufacturing and ending at their use. The source of risk begins from storage and handling at the point of supply to users. The risks of handling pesticides were greater in most developing countries according to lack of the infrastructure and well- trained personnel on safe handling pesticides during their handling (FAO, 1988). Chemicals pesticide for pest control may result in adverse side effects to farmers and their families and the whole environment, therefore the need for regulations has become

very important on the use and handling of the pesticide. Due to the adverse impacts on ecology and human health the handling of pesticides should be regulated such as in Europe and America (Charlotte et al., 2006).

Regulation of the use and handling of pesticides in Sudan began with the issuance of the Poison List for the year 1939, and at that time the pesticides used were limited to inorganic materials such as Arsenic compounds to control veterinary pests, Barium carbonate to control rodents and mercury compounds to combat fungi. In the year 1963, the Poison List was amended to become the Pharmacy and Poisons Act of 1963. It included new materials that govern the storage, sale and import of toxins and the pesticides were listed under the Poison List. In 1974, the first separate legislative law on pesticides was issued under the name of the Pesticides Law of 1974. In 1994 the pesticides law was amended to the pesticides law and then to the pest control products law for the year 1994. Work on pesticides is currently regulated by the Pesticides and Pest Control Products Act of 1994 and the regulations issued there under from the National Council of Pesticides and its technical committees.

The private sector in Sudan has emerged during the last two decades as a result of the government privatization policy and agricultural reforms regarding insufficient extension services provided by the public agricultural extension organizations in the country and involves personnel that deliver advisory services in the area of agriculture and considered as an alternative to the public extension (Abdel Rahman et al., 2016). Many Studies pointed out that farmers consider their local agricultural pesticide sales personnel as their main source of recommended pesticide application practices. In Tanzania for example many farmers who work on their own farms do not read labels but rely on advice from pesticide retailers, extension officers, and neighbors (Ezra et al., 2017). Therefore pesticide sales personnel have a continuing need to update their knowledge of pesticide use, safety, and regulations. (Buhler et al., 2003). Agricultural extension plays a crucial role in improving the capacity building of its audience including, individuals, groups, organizations and rural communities (Degnbol et al., 2002). Capacity development can be seen as a major requirement for achieving impact in agricultural extension personnel development to ensure effective service delivery to its audience. The generation and diffusion of technology, innovation and management skills for more intensive and modernized agriculture and its needed services become of high importance, this can only be achieved through the capacity development of human resources employed in the agriculture sector (Chikaire et al., 2015).

To date, no studies have assessed knowledge and practices of pesticide sales personnel in Africa continent (Lekei et al., 2014). Many studies in Sudan have shown that farmers rely on retailers to buy pesticides and get information including use instructions without assessing the qualifications, knowledge and work experience of retailers on safety measures of pesticide. This study, therefore, intended to assess qualifications, knowledge and work experience of sales personnel on safety measures of pesticide in Wad Medani Central Agricultural Inputs Market, Gezira State, Sudan that will help to avoid the adverse impacts of incorrect handling of pesticides on the environment and human health in the country.

2. Materials and Methods

2.1. Area of the study:

This study was undertaken in Wad Medani Central Agricultural Inputs Market, Gezira State, Sudan. Gezira State falls in central Sudan and lies between the Blue Nile and the White Nile. It has an area of 23,373 km² and an estimated population of approximately 3,300,000 (2000). The name comes from the Arabic word for the peninsula. Gezira State represents the beating heart of Sudan. It is a well-endowed State particularly in agricultural resources; secondly, Gezira lies entirely in the central clay plain of Sudan, in an area of 2.76 million hectares of which 91.9 % is suitable for agriculture. The area under irrigation is about 1.04 million ha. And area under rain-fed farming is 0.63 million ha. It includes the Gezira scheme which is the largest of its kind in the World. Gezira scheme alone covers 84% of the cropped area in Gezira (50% of the total irrigated area in Sudan). Gezira State also includes 60% of Rahad scheme (75,000 ha), in addition to Gunied Sugar Cane Scheme (18,300 ha), there are also many of the small and large scale irrigation schemes owned by individuals and companies and areas of which total 78,552 ha, in addition to more than two thousand feddans (833 ha) under traditional farming along Rahad river and Blue Nile banks. Thirdly Gezira is one of the most populated states in Sudan and most of the populations are working directly and indirectly in the agricultural sector.

2.2. Study population:

The total number of agricultural service providers in Wad Medani Central Agricultural Inputs Market was estimated to be 140 for 2014/2015 growing season using the full count method.

2.3. Sample size and data collection:

The study was based on primary (qualitative) data. Qualitative methods are ways of finding out what people do, know, think and feel by interviewing, observing and analyzing data from documents (Patton, 2002). The data were gathered by administering a questionnaire among 70 agricultural service providers in 2018/ 2019 growing season

selected using the simple random sampling technique to obtain a fairly accurate result with reasonable cost (%50 of the total population).

2.4. Data Analysis:

The collected data were statistically analyzed and interpreted using percentage and frequency distribution and chi-square test. The chi-square test was used to test the association between education, work experience of sales personnel and the safety measure of pesticide.

3. Results and Discussion

Selected socioeconomic characteristics of the sales personnel:

The data in the table (1) showed that all sales personnel (100%) reported that they are bachelor degree holders in agriculture. From this result, we can observe that the sales personnel have well agricultural education background which will enable them in all their work activities. K. Adebayo (2004) mentioned that staffs who deliver a service need to have appropriate expertise, knowledge and skills if they are to be effective and remain credible in the eyes of clients. The result of this study is not in line with the result reported by Nadja et al., (2014) who found that only four of the 22 interviewed retailers had higher education or formal education regarding pesticides at the college level.

The data in the table (1) reveals that (57%) of sales personnel (75%) reported that they are male while (43%) of them are female. Also, the data shows that (29%) of the sales personnel have age between 20-30 years old, (41%) of them between 31-40 years old, (10%) of them between 41- 50 years old and (20%) of them have 51 years old and above. Similarly, Nadja et al., (2014) found that the median age of the Zanzibar pesticide retailer was 35 year. Both genders were represented, but there were slightly more men than women working as retailers

Table 1. Selected socioeconomic characteristics of the sales personnel

Demographic profile		
Qualifications	Frequency	%
BSc	70	100
Total	70	100
Gender ratio	Frequency	%
Male	40	57
Female	30	43
Total	70	100
Age	Frequency	%
20-30	20	29
31-40	29	41
41-50	07	10
51 and above	14	20
Total	70	100

Distribution of the sales personnel according to their specialization:

It is revealed from the table (2) that (57%) of the sales personnel holds BSc degree in crop production, (14%) of them hold BSc degree in pesticides and (29%) of them hold BSc degree in other agricultural specializations such as agricultural extension and animal production. As known process skills or human how skills can be acquired from agricultural extension discipline only while the technical skills can be acquired from other agricultural disciplines during the study period in agricultural institutions. Abdul Halim et al., (1997) cited that a good extension agent needs to possess both process and human how skills and technical skills which are necessary for his work. Facilitating group formation and engaging stakeholders in programme planning are examples of process skills or functional while conducting a method demonstration on how to add chemical fertilizers to the wheat crop are an example of technical skills. Technical skills were necessary but not sufficient for effective teaching and learning in agriculture, therefore the effective extension officer must integrate technical skills with process skills.

Table 2. Percentage distribution of the sales personnel according to their specialization

Education level	specialization	Frequency	%
1-BSc	Pesticides	10	14
2-BSc	Crop production	40	57
2-BSc	Other specializations	20	29
Total		70	100

Period of appointment:

Data in the table (3) indicate that (57%) of the sales personnel the period of their appointment from 1 -5 years, (29%) of them the period of their appointment more than ten years and (14%) of them the period of their appointment 1-10 year. From this result, we can see that the period of appointment of the sales personnel is quite enough to provide them with good experience in their work which in turn will support and increase the success of all sales activities carried out by them. Period of appointment is essential for extension personnel because it will increase their ability, knowledge, skills, and behavioural dimensions that are important for the extension personnel, including concern for and commitment to rural people, empathy, problem - solving orientation, high motivation to influence and educate farmers, ability to work under unsupervised and difficult work conditions, patience and persistence and team spirit which will ,in turn, maintain and improve job performance. Similarly, Indira eat al., (2017) found that in Kerala, India salesmen who were more experienced tend to be more aware of the scientific aspects of chemical pesticides and its handling. And also Manjula et al., (2018) mentioned that in Anuradhapura District of Sri Lanka Vendors 'experience of selling pesticides was as follows: less than 1 year (25%), 1–5 years (39%), over 6 years (36%).

Table 3. Percentage distribution of the sales personnel according to period of appointment

Period of appointment	Frequency	%
From 1 to 5 years	40	57
From 6 to 10 ears	10	14
More than 10 years	20	29
Total	70	100

Selected safety measures of pesticide:

Pesticides display method:

Table 4 shows that the majority of the sales personnel (84%) display pesticide packages on shelves as indicated by the National Pesticides and Pest Control Products Act, (10%) of them leave them inside the cartons (4%) of them put it inside the cupboards and 2% of them use other display methods.

Table (4) also, revealed that there was a significant association between education levels of sales personnel and pesticides display method followed and there was a significant association between the period of appointment of sales personnel and pesticides display method followed. This means that the education levels and period of appointment have a positive impact on pesticides display method followed.

Table4. Percentage distribution of the sales personnel according to pesticides display method followed

Pesticides display method	Frequency	%	Education Sig.	Period of appointment Sig.
On shelves	59	84	.000	.000
Inside the cartons	07	10		
Inside cupboards	03	04		
Other methods	01	02		
Total	70	100		

Significance level 0.05 or less.

Type of pesticide storage building:

All types of pesticides stored in quantity must be stored in securely locked and well-ventilated rooms (stores), far away from all food or feed items. Table (5) revealed that majority of the sales personnel (94%) store pesticides in stores as indicated by the National Pesticides and Pest Control Products Act, (1%) of them store pesticides them in rakoba and (1%) of them store pesticide in ordinary rooms.

Table (5) also, indicate that there was a significant association between education levels of sales personnel and type of pesticide storage building and there was a significant association between the period of appointment of sales personnel and type of pesticide storage building. This means that the education levels and period of appointment have a positive impact on the type of pesticide storage building.

Table5. Percentage distribution of the sales personnel according to type of pesticide storage building

type of pesticide storage building	Frequency	%	Education Sig.	Period of appointment Sig.
Stores	68	98	.000	.000
Buildings from plant parts (rakoba)	01	01		
Ordinary rooms	01	01		
Total	70	100		

Significance level 0.05 or less.

Type of pesticide storage method followed:

As mention in the literature, correct storage is important in preventing vandalism, theft, or the possible misuse of products. Table (6) indicate that the majority of sales personnel (69%) store pesticides on the ground as not indicated by the National Pesticides and Pest Control Products Act, (20%) of them store pesticides on shelves as indicated by the National Pesticides and Pest Control Products Act, and 11% of pesticides store pesticides using other methods.

Table (6) also, showed that there was no significant association between education levels of sales personnel and type of pesticide storage method followed and there was no significant association between the period of appointment of sales personnel and type of pesticide storage method followed. This means that the education levels and period of appointment have no impact on the type of pesticide storage method followed. After asking the sales personnel about why did not follow the correct method to store pesticides, they answered that they knew the correct method of storing pesticides but the building is rented and has a narrow space for storage, which forces them to put pesticides on the ground.

Table6. Percentage distribution of the sales personnel according to type of pesticide storage method

pesticide storage method	Frequency	%	Education Sig.	Period of appointment Sig.
On the ground	48	69	0.273	0.273
On shelves	14	20		
Others	08	11		
Total	70	100		

Significance level 0.05 or less.

Method of selecting pesticides:

Table (7) shows that (40%) of the sales personnel select the right pesticide for the buyer according to the instruction affixed to the container of each pesticide, (39%) of them depend on the advice of the agricultural extension officer, (18%) of them depend on themselves in selecting the appropriate pesticide, and (3%) of them depend on other methods to select the appropriate pesticide for the buyer. Similarly, Sadavy et al., (2000) found that a study in India on pesticide use pattern by farmers revealed that 47 % of farmers obtained information from pesticide sellers in the market and 33 % of them from neighbours or relatives. The result of this study is not in line with the result reported by Kapeleka et al., (2017) who found that 66.7% of the farmers get information from pesticides retailers.

Table (7) also, revealed that there was a significant association between education levels of sales personnel and method of selecting pesticides and there was a significant association between the period of appointment of sales personnel and method of selecting pesticides. This means that the education levels and period of appointment have a positive impact on the method of selecting pesticides.

Table 7. Percentage distribution of the sales personnel according to method of selecting pesticides buyers:

Method of selecting pesticides	Frequency	%	Education Sig.	Period of appointment Sig.
Instructions affixed to the container of the pesticide	28	40	.000	.000
Based on the advice of the agricultural extension officer	27	39		
Based on the sales personnel themselves	13	18		
Other methods	02	03		
Total	70	100		

Significance level 0.05 or less.

4. Conclusion and Recommendations

From the present study, it can be concluded that the agricultural private sector suffers from some obstacles that need solutions to be able to play its role more better, especially store specifications and training of sales personnel. Therefore, the study recommend that the stores should be built according to the required specifications, along with the training sales personnel during their service, in both process and human how skills and technical skills which are necessary for their work and further agricultural extension researches should be conducted in this research area.

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