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ROLE OF WOMEN IN THE MANAGEMENT OF AFLATOXINS IN MAYUGE DISTRICT, UGANDA

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ABSTRACT: *The study was done to evaluate the role of women in managing aflatoxins using shelling and sorting of groundnuts. A combination of questionnaires focus group discussions, literature, and key informants were used to collect the data. A total of 100 respondents participated in the study. The majority of participants were women and girls, a big proportion of whom were older women (age ≥31 years), making 55.8%. Of these, 48.9% had only primary education. The study showed that 36.3% of the female were married though the number of widows (18.8 %) was also high. The elderly women were more influential in making decisions on the management of aflatoxins and more females than males used and valued this knowledge. Shelling and sorting were done mainly by hands due to financial constraints to acquire mechanical tools.*

KEYWORDS: Aflatoxins, Elderly Women, Uganda

INTRODUCTION

Women are the agricultural backbone of Uganda; however, systems, social and cultural practices have not allowed them to realize their full potential. Only 7% of women who provide 70-80% of agricultural labour in Uganda relying on their muscle power and hand tools have rights to own or control the use of land. Furthermore, only 30% have access to and control over proceeds from the land. This results from the patriarchal system of inheritance and anomalies in intra-household power. When the woman becomes a widow, in-laws tend to strip the late husband's family leaving her without a home, assets or even land (Devereux, Lwanga Ntale, & Sabates-Wheeler, 2002). The few women who own some land lack mechanization technologies (Mrema, Baker, & Kahan, 2008) and resort to using detrimental herbicides for weed control as a way of increasing farm area. These herbicides have been associated with a reduction in overall yield due to destruction of food making (Varshney, Hayat, Alyemeni, & Ahmad, 2012), systems of the crops, injuries on leaves and stems, weed resistance leading to the increased cost of management (Mrema et al., 2008), and destruction of soil micro-organism leading decreased soil water penetration. This kind of practice results from a lack of capital to invest in mechanized agriculture (Zaller, Heigl, Ruess, & Grabmaier, 2014).

Furthermore, the minority, who in most cases acquire loans from banks at high-interest rates using land titles as security, invest without a well-informed background. This in turn leads to low yields and subsequent failure to pay back bank instalments. Also, the high bank charges

usually scare away the majority of female farmers leaving them with no option other than subsistence farming which has not supported well family nutrition. Due to poor nutrition, 12% of women are malnourished while 16% of their children under 5 years are underweight (UNAP, 2011). This places Uganda in14th position for countries with large populations of nutritionally challenged children (Ssewanyana & Kasirye, 2012). Similarly, the girls are adversely affected culturally whereby 80% of them are normally forced into marriage by 19 years by their parents in the bid to get hefty bridal price. Once the bridal price is paid, the girl becomes a property of the husband entitling him to her labour, sexual availability and obedience1. Subsequently, all the will power of the girl growing into a woman is taken away.

LITERATURE

The great majority of farmers are uninformed of the challenges brought by Aflatoxin contamination; therefore, multi-level education is paramount. Once awareness has increased, preventative measures can be taken (FAO, 2011). For instance, drought conditions at pre-harvest can cause cracking of the groundnut pod, enabling the fungus to penetrate and invade the seed (Kaleta & Krzysztof, 2013). Proper storage at post-harvest is also important and it is vital that crops are dried to a 'safe' moisture level as soon as possible (Sebunya & Yourtee, 1990).

If African farmers were to help themselves to produce more groundnuts for their families (Kihaga, 2011), at the end of the intervention, the anticipated outputs are that smallholder farmers needed to be sensitized about the health and environmental risks associated with Aflatoxin and improper pesticide use (Baributsa, Baoua, Bakoye, Amadou, & Murdock, 2017). To ensure that farmers adopted technologies that would improve their livelihoods, farmers needed tools to communicate effectively. This implied that men would have access to and control those technologies as they could have and use them, while the women would continue using the traditional tools like pounding using mortars, beating using sticks and more-so their bare hands.

The management of Aflatoxins depends on the way the groundnuts are stored (Benkerroum, 2020); (Ncube & Maphosa, 2020); (Villers, 2014). Aflatoxin can enter the groundnuts at any stage. This comes about when one does not take precautions in handling the groundnuts well especially during storage (Ncube & Maphosa, 2020). It may also come from the preparation of land for sowing the crop, the choice of land, the season when it is planted and goes all the way when harvested and shelled. This shows the Aflatoxins journey to the bodies of the population. Controlling of Aflatoxin in groundnuts has to be done from the field to the plate involving all handlers, that is the farmers, producers/traders and the consumers.

Prevention is better than cure and avoiding/minimising the infections would be more appropriate than trying to combat the challenges of Aflatoxin contamination. Despite that, weather conditions, pre- & post-harvest management and the genetic vulnerability of the plant all play a role in the susceptibility of the harvests to fungus (Raza et al., 2019). An integrated approach is a better solution in such circumstances. The consortium of global, regional and national institutions, which are now collaborating in combating this complex problem, demonstrates the significance of Aflatoxin contamination (Suwarno et al., 2019).

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Women and men play a major role in the management of Aflatoxins of groundnuts. Women, young children (boys and girls) use hands in shelling while the men prefer to use machines which attract the moulds thus causing Aflatoxins in the seeds (Kumar, Mahato, Kamle, Mohanta, & Kang, 2017); (Benkerroum, 2020). Men use a lot of energy while shelling using machines thus crushing the groundnut seeds which encourages the Aflatoxins (Kaaya, Kyamuhangire, & Kyamanywa, 2006).

METHODOLOGY

Study Area

The study was conducted at Basooka Kwavula Farmers' Cooperative Society, Bayitambogwe sub-county, Mayuge District, Uganda, **Figure 1**. This area has a population distribution of approximately 30,000 to 60,000 people.

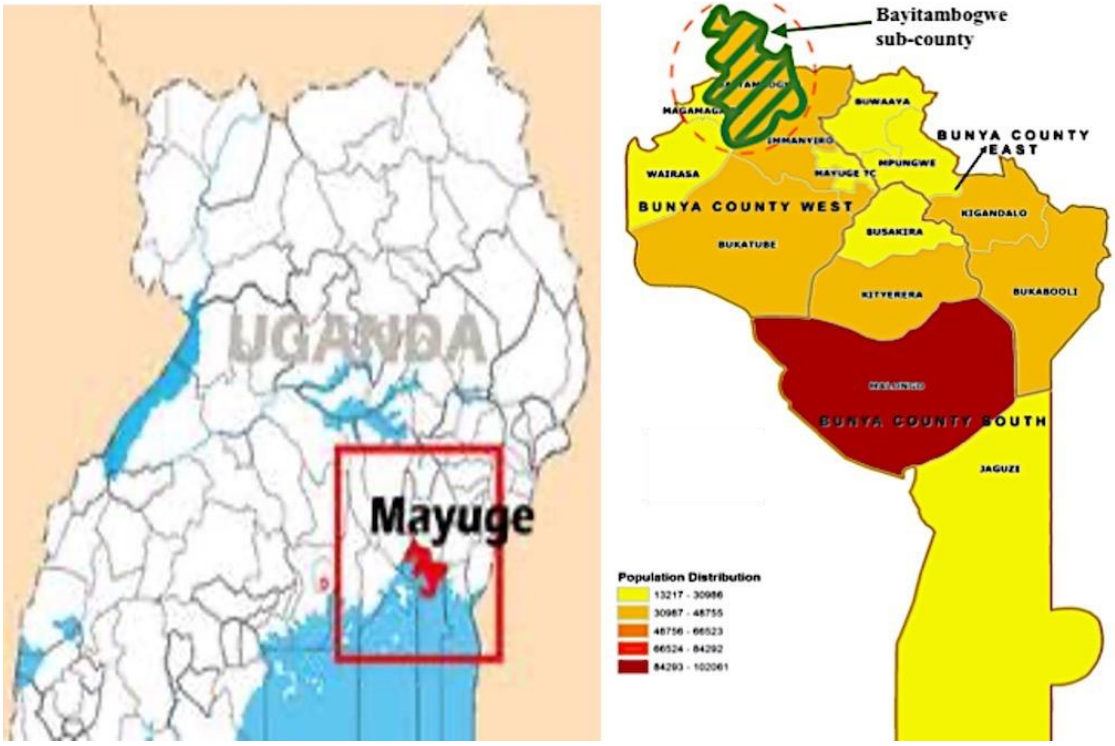

Figure 1: A map showing the study area circled in red dotted lines and shaded green

Data Collection

Questionnaires were collected as soon as they are filled to avoid loss and misplacement. Assistants were used to administer the questionnaires where in-depth interviews with selected households were conducted and major points of interests were drawn.

There were seven Focus Group Discussions (FGD) to further the understanding of the key concepts like utilization of the lived knowledge. Documents were consulted to make sure the Researcher was on the right track especially of the gender concepts and theories. Two key informants were consulted and interviewed to further the understanding of the subject matter.

Data Processing, Analysis and Presentation

Questionnaires were collected as soon as they are filled to avoid loss and misplacement. In-depth interviews with selected households which included women, men, girls, boys and they were conducted, and major points of interests were drawn.

The data was collected and edited daily in the field to check for completeness, accuracy and refinement. Focus Group Discussions (FGD) were tape-recorded, transcribed and translated from local language to English.

Data were coded, tabulated and analysed using MATLAB, Excel and SPSS software to derive frequencies and cross-tabulations to test for any relationships between the study-variables especially gender, local economic development and access to market information services.

Qualitative data were analysed based on the themes as was presented with the checklist of the interviews, FGD, the questionnaire and observations. Qualitative data collected by the interview guide was analysed using content analysis. Categories were formed to analyse the data more systematically.

RESULTS

The total sample of 100 respondents was composed of 86% females and 14% males.

Age

The majority of participants were women and girls, a big proportion of which were older women (age range ≥31 years), making 55.8% **Figure 2**.

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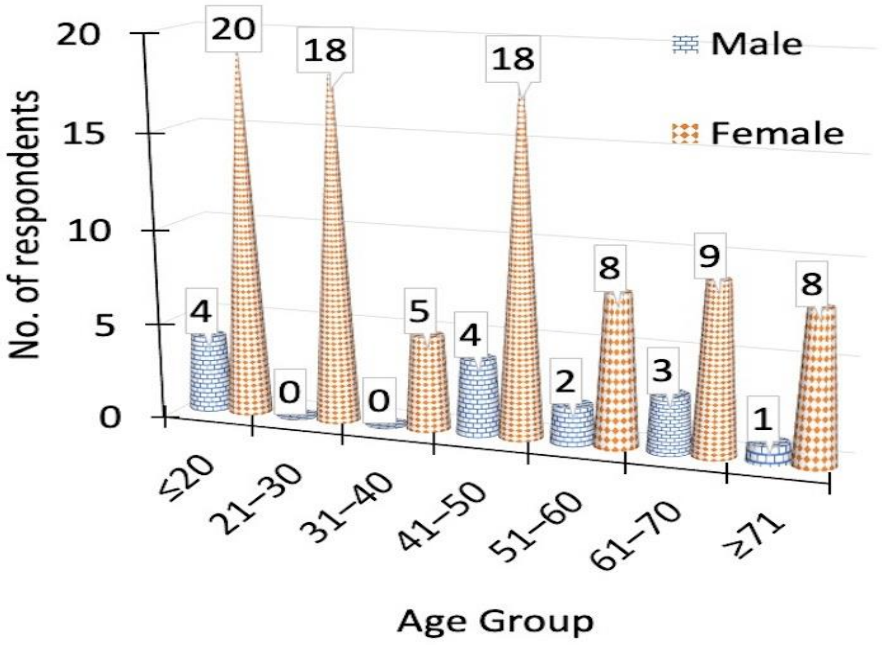

Figure 2: The age group of the respondents

Education

The majority (48.9%) of respondents were women with just primary level education (Jamie Anderson, Colleen, & Scott, 2016), **Figure 3**.

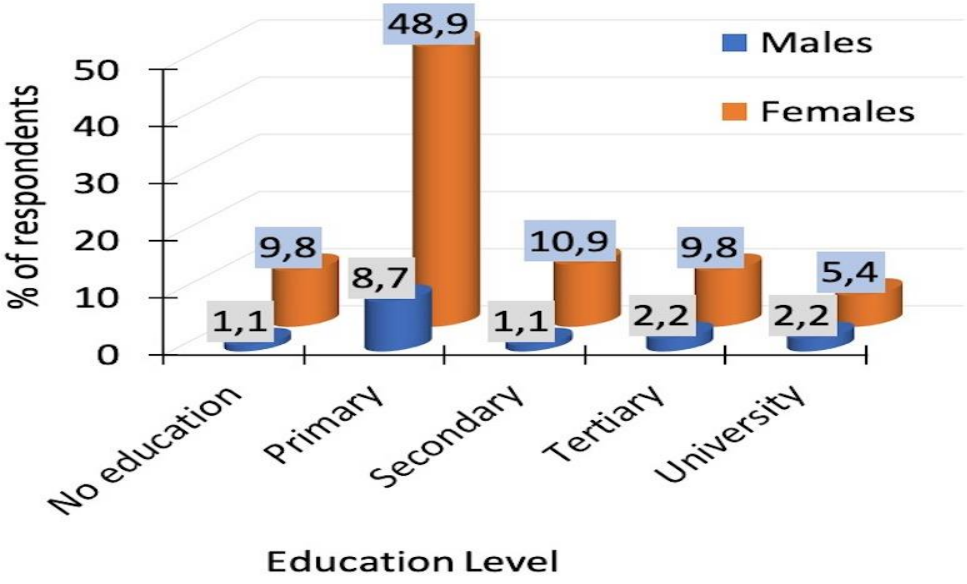

Figure 3: Education level of the respondents

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Marital status

The vast majority of women were married though the number of singles was also high.

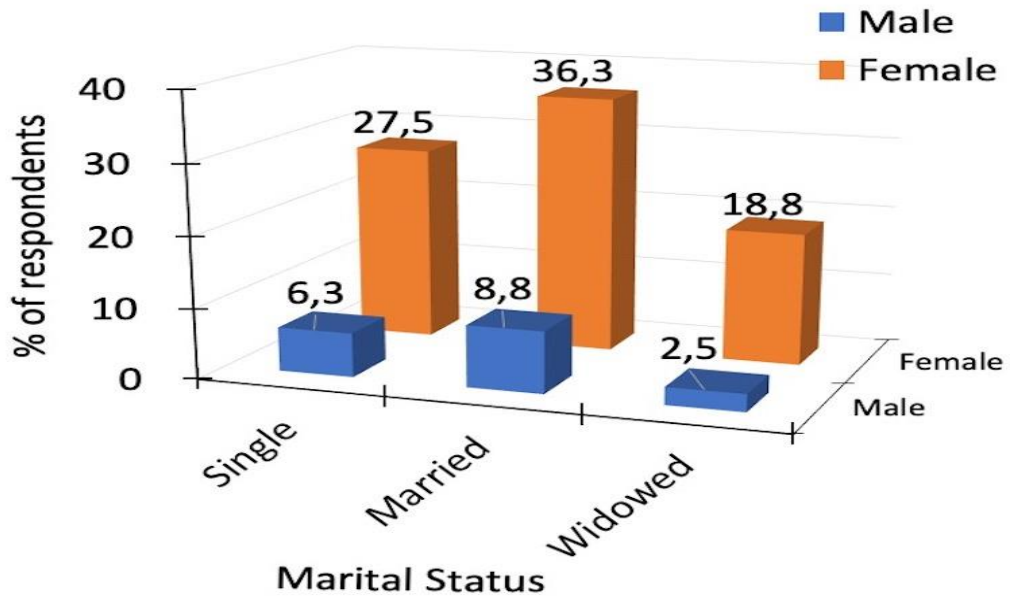

Figure 4: Marital status of the respondents

Knowledge of aflatoxins

Elderly women were very influential in disseminating information about management of aflatoxins as seen in **figure 5.**

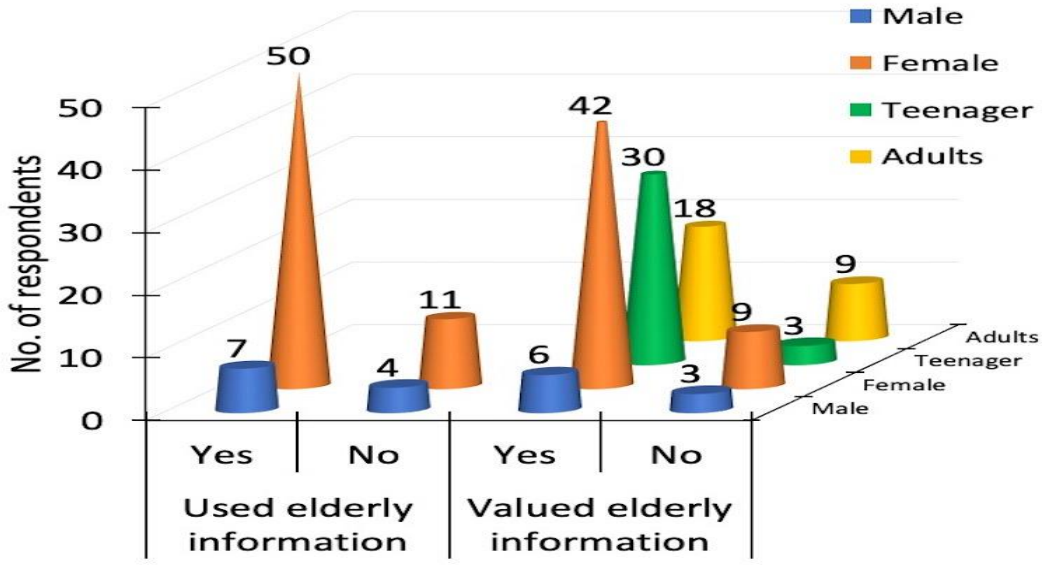

Figure 5: Knowledge of aflatoxins by respondents

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Decision making

Decision making was exercised at all levels and age groups; however, elderly women still had a big impact as seen in **figure 6.**

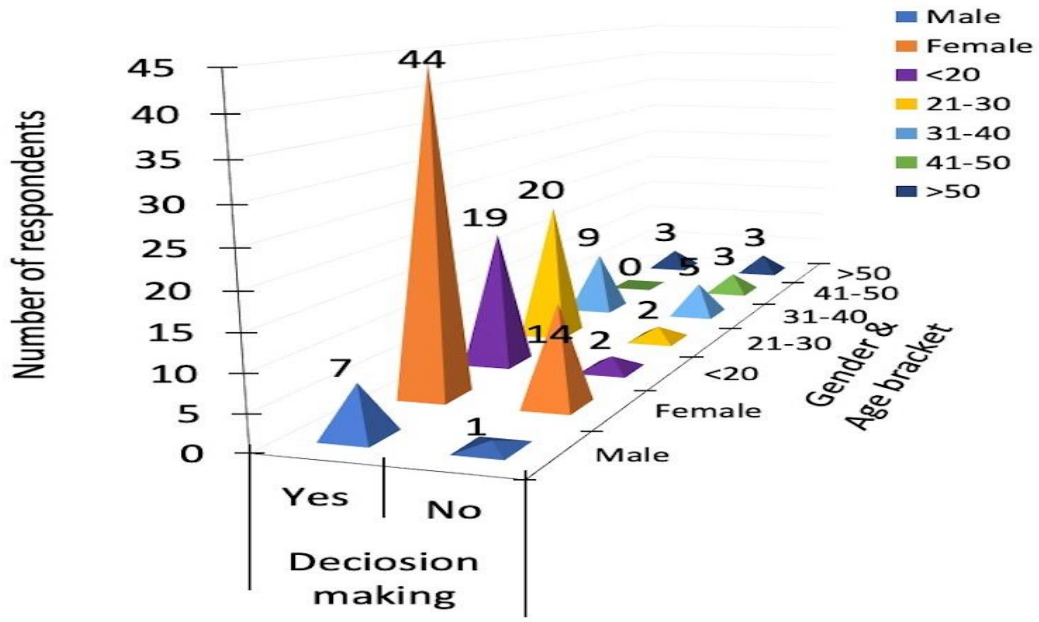

Figure 6: Decision making versus gender for aflatoxin management

Labour

Allocation and distribution of labour in this community followed a set pattern. Those who could hire, sell labour or use machines were all represented in this community (**figure 7**)

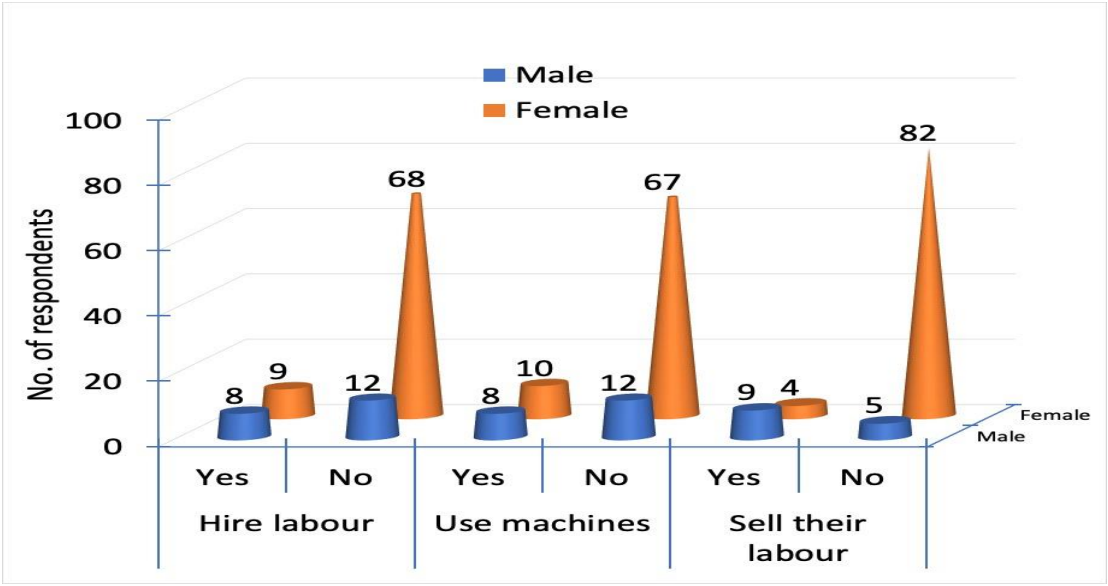

Figure 7: Allocation of labour for sorting and shelling of groundnuts

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Other activities

In addition to management of aflatoxins through shelling and sorting of groundnuts, women do a lot of farming to supplement their income (Aberman & Roopnaraine, 2020) **Figure 8**.

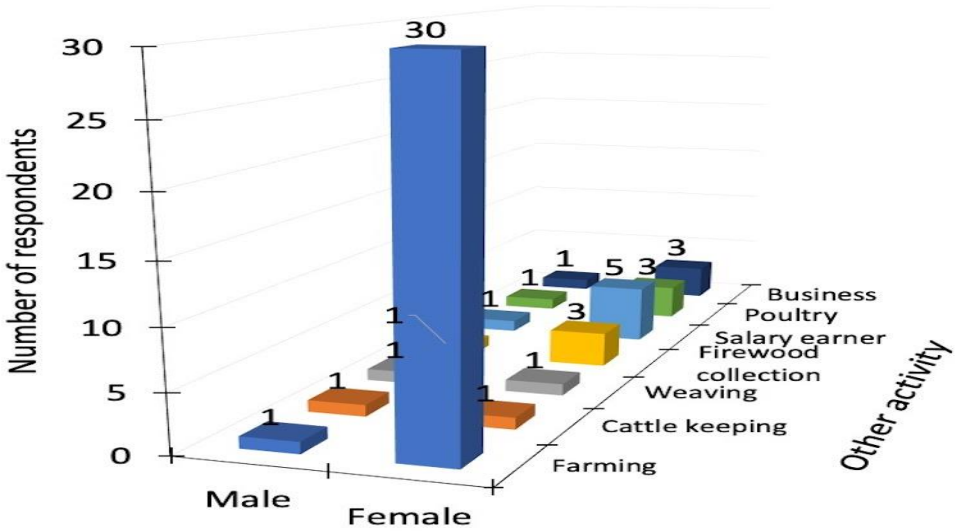

Figure 8: Other activities done other than shelling and sorting of groundnuts

Statistical analysis

The elderly women's lived knowledge was significant in the passing on knowledge to the young ones. The Chi-Square test, **Table 1**, confirmed that the elderly women lived knowledge was significant and sharing with the respondents.

Table 1: Chi-Square test for elderly women lived knowledge in the management of aflatoxins

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.899[a]	1	0.168		
Continuity Correction[b]	0.950	1	0.330		
Likelihood Ratio	1.699	1	0.192		
Fisher's Exact test				0.224	0.163
Linear-by-Linear Association	1.872	1	0.171		
No. of Valid Cases[b]	72				

a. 1 cell (25.0%) had an expected count of less than 5. The minimum expected count was 2.29
b. Computed only for a 2X2 table

DISCUSSIONS

More women dominated the shelling and sorting of groundnuts (Orr, Tsusaka, Kee-Tui, & Msere, 2014) similar to the findings by previous studies in Western African countries, (Kaaya et al., 2006). The socio-demographic characteristics of the respondents have revealed that the utilization of the lived knowledge as discussed in this chapter is very important (Atongbiik Achaglinkame, Opoku, & Amagloh, 2017). This has led to the labour allocation (Ilesanmi & Ilesanmi, 2011), of some of the household members and documentation of the elderly women's lived knowledge in the management of aflatoxins in groundnuts influenced by age (Udomkun et al., 2018); (Magembe, Mwatawala, Mamiro, & Chingonikaya, 2016).

Having a big proportion as women (age range ≥31 years, making 55.8%) showed how involved women are in aflatoxin management in this area (Perduri & Gobba, 2009), (de Almeida et al., 2019). However, in terms of family headship, an extensive study (Jamie Anderson et al., 2016) showed that nearly half of the heads of households are under the age of 40 (45%). Just over half (55%) are 40 or older, and one in five is at the far end of the age spectrum (60 years old).

Primary level of education for majority of respondents with few at higher levels makes aflatoxin management a challenge since extensive training and refreshers are required to keep the community well informed about the dangers of aflatoxins (Ayo, Matemu, Laswai, & Kimanya, 2018).

A complete family (mother, father and children) is the foundation of any development in a country. The study showed that a sizeable percentage of respondents were married (Ayo et al., 2018) or cohabiting (Jamie Anderson et al., 2016), (Dorner, 2008). However, the number of widows was also high (Seetha et al., 2017).

The study demonstrated that the use and value of elderly information in the management of aflatoxins were significant for males, females, teenager or adult (Seetha et al., 2017). Since formal education and training about aflatoxin was limited, information sharing through elders was the feasible route.

Again, women showed a high impact in decision making when it came to aflatoxin management (Waithanji & Grace, 2014). The young (<30 years) especially were more involved. This could be attributed to their physical contribution in general agriculture since they are more energetic than elders and most of the work is done manually with little mechanisation.

Since the people in this community were mostly peasants, they prefer not to hire labour. Again because of financial constraints and limited government support, most work is done manually with hands (Aberman & Roopnaraine, 2020). The more energetic especially men, end up selling their labour to get an extra income (Revathi, Penkwan, & Hathairat, 1999). Women on the other hand tend to rely on their income from their farms only (Sugri et al., 2017).

Limitations of the Study

The resources were the main limitation of the study. Some respondents expected to be given money so that they could give the information. This limited the number of respondents to 101. Questionnaires could not be used for the illiterate respondents. School going children answered some questions on behalf of the elderly women or translated for them thus losing some of the

meaning. It was even very difficult to explain technical terms to the respondents due to the language barrier. In some cases, men refused to be interviewed saying the study was for only women, especially the old.

CONCLUSIONS

In this paper, we have seen that socio-demographics, age, education, marital status, knowledge decision making, and labour availability all affected the management of aflatoxins. Much of the work concerning aflatoxin management was done by women and girls. Therefore, strengthening financial, agricultural extension and advisory services to women and girls at a grass-root level will assure the reduction in aflatoxins, enhanced agricultural productivity, nutrition and Uganda's agricultural export potential.

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