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## Comparative Analysis of the Contributions of Men and Women to Farming Decisions among Rice Producing Households in Ebonyi State, Nigeria

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### Abstract

*The study examined the contributions of men and women to farming decisions among rice producing households in Ebonyi State, Nigeria. A multi-stage sampling method was used to select 120 rice producing families. Husband and wife involved in rice production as a unit were interviewed and data were collected using questionnaire. Collected data were analysed with mean, standard deviation, chart and z-test. The result showed that the mean contribution of men in pre-harvest decisions ( $\bar{x} = 3.54 \pm 0.18$ ) was higher than that of women ( $\bar{x} = 2.43 \pm 0.24$ ). On the other hand, the mean contribution of men in decision-making in post-harvest activities ( $\bar{x} = 2.54 \pm 0.48$ ) was relatively low compared to that of women ( $\bar{x} = 3.47 \pm 0.16$ ). There was a significant difference in the level of contributions of men and women to decision-making in pre- and post-harvest activities. Improved commitment to helping farmers gain more access to farm-related information to make informed decisions about their farming business is recommended.*

**Keywords:** Gender, decision making, rice, farm households, Ebonyi State.

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## Introduction

Rice (*Oryza sativa*) is an important staple in Nigeria and is internationally consumed by all social and economic classes. Rice production is important in Nigerian agriculture and forms vital element in the government's efforts to promote food security and curb food imports to feed the population (Amusa, et al, 2020). Ebonyi State is one of the rice-producing states in Nigeria (Nwahia, 2020). The state is known for its cultivation of low rain-fell lowland and irrigated rice.

Rice production in Nigeria has increased significantly. For instance, the quantity of milled rice in Nigeria increased from 2,818 million metric tonnes in 2010 to 5,000 million metric tonnes in 2021 (Sasu, 2022). Land area under rice cultivation has also increased drastically. Despite the apparent increase in domestic rice production, local production in Nigeria has never met the growing demand and consumption of rice in the country. For example, Kamai, et al, (2020) noted that rice consumption in Nigeria is increasing rapidly due to some significant factors including changes in consumer preferences regarding rice, population growth, rising income levels and rapid urban growth.

Currently, Nigeria is not self-sufficient in rice production, but can produce the amount needed and even more for export if farm resources are well utilized across the production stages of the product (Mohammed, et al, 2019). Rice production cuts across pre-harvest and post-harvest activities with a wide range of activities ranging from land selection, clearing, nursery, rice field preparation, planting/transplanting, weeding, manuring/fertilizer application, scaring off birds and rodents, harvesting, threshing, parboiling, drying, winnowing, packaging to marketing (Amusa, et al, 2020). Each of these stages of rice farming is important and requires a wise allocation of farm resources resulting from informed farm decisions.

Farm decision making is a smart and sensible process in which farmers use their available knowledge of farm resources to select and integrate them to address their farming challenges and achieve farm goals. According to Nicholson, et al, (2020), farm decision is a conclusion or resolution reached after consideration and being the result of processing a situation and deciding what action to take. Hence, farm decisions are made when farmers face the challenge of limited resources with alternatives and therefore have to make certain choices and decisions. Farmers make day-to-day decisions about the use of inputs, seasonal decisions about what to plant, and annual decisions about renting farms which affect agricultural production, prices and costs. Rice farmers collect farm-related information, make predictions, interpret information and make decisions about allocating available farm resources. Men and women farmers form the bulk of farm resources responsible for decision making in the wise allocation of other farm resources for maximized output.

In agriculture, the roles and relationships between men and women and their access to and control of farm resources determine their level of contributions to farm decision making. Olakojo (2017) noted that there has been increased focus on

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gender issues, emphasizing men and women empowerment in agriculture and economic development. This is based on increased awareness that development outcomes can have a detrimental effect on failure to address the different social positions of men and women in terms of resource allocation, opportunities and rights in the formulation, design and implementation of development policies and resource allocation and decision-making at the level of farm households. Olakojo (2017) further pointed out that failure to recognize gender roles, differences and inequalities would pose a significant threat to the successful implementation of the agricultural development agenda.

It is important to state that the achievement of farm objectives depends on the quality of informed decisions subject to farm-related information available to the farmers. Aside from the aforementioned importance of farm decisions in achieving agricultural production goals and the need for gender mainstreaming, there is a lack of empirical evidence regarding the role of men and women in decision-making in producing essential foods such as rice. Based on this domain, this study examined and compared the levels of men and women contributions to farming decisions among rice-producing households. The study examined the levels of contributions of men and women to: decision making in pre-harvest rice farming activities, post-harvest rice farming activities, and differences in the contributions of the farmers to decision making process at pre and post-harvest rice farming operations.

## Methodology

The study area was Ebonyi State which is between latitude 7° 30'E, and 8° 30'E, longitude 6° 40'N, and 6° 45'N and a land mass of approximately 5,932 square kilometres. Ebonyi State comprises 13 local government areas (LGAs) grouped into three agricultural zones: Ebonyi North, Ebonyi Central and Ebonyi South. The state has a population of 2,880,383 (National Bureau of Statistics [NBS], 2016). Ebonyi is an agrarian state known for its famous Abakaliki rice, making it one of the food baskets of southern Nigeria. Agricultural activities from production and processing to marketing of crops and livestock products are major sources of livelihood, providing employment and income for more than 75% of the population.

The study adopted a multi-stage sampling process in selecting 120 rice farm households across the state as follows:

The first phase involved a convenient selection of three agricultural zones (Ebonyi North, Ebonyi Central and Ebonyi South) due to the widespread production of rice throughout the state.

In the second phase, two LGAs were randomly selected from each of the three agricultural zones, making a total of six LGAs for research.

The third phase of sampling equally involves the random selection of two rice farming communities from each of the six LGAs, making a total of 12 rice communities in the study. With the help of agricultural extension agents in LGAs and

key informants in selected communities, the lists (sample frameworks) of rice-growing households were compiled.

In the fourth phase, ten rice producing households in 12 selected communities were purposively sampled making a total of 120 rice producing households in the study. The purposive selection was to ensure that households with a husband and wife who were still alive and active in rice production were selected. This is because, the instrument (questionnaire) for data collection has separate sections to be responded to by the husband and the wife regarding their levels of contributions to rice farming decision making.

The data for this study were obtained from a primary source using questionnaire and an interview schedule between June and July, 2021. Each of the questionnaires was structured to collect both the responses of men and women in a household on their respective levels of contributions to decision making in rice farming operations. In that case, the men and women were guided to respond to the same questions in their separate sections.

In collecting data to compare the levels of contributions of men and women to decision making, 4-point rating scale was employed. The contribution was graded as: very high (VH) = 4, high (H) = 3, low (L) = 2 and very low (VL) = 1. Mean scores that are less than 2.50 were interpreted low contributions while mean scores that are greater than 2.50 were interpreted as high contributions.

The test of significance ( $p < 0.05$ ) difference in the mean contributions of men and women to decision making in rice farming operations was achieved using Z-test statistics.

## Results and Discussion

### Contributions of Men and Women to Decision Making in Pre-harvest Operations

The result in Table 1 shows that the mean ratings of the contributions of men to decision making on selection of suitable land ( $\bar{x} = 3.94 \pm 0.24$ ), land clearing ( $\bar{x} = 3.78 \pm 0.64$ ), stumping ( $\bar{x} = 3.54 \pm 0.55$ ), land preparation for planting ( $\bar{x} = 3.27 \pm 0.60$ ), construction of furrows ( $\bar{x} = 3.65 \pm 0.58$ ), sourcing planting materials ( $\bar{x} = 3.87 \pm 0.40$ ), planting/transplanting ( $\bar{x} = 3.57 \pm 0.73$ ), fertilizer application ( $\bar{x} = 3.54 \pm 0.68$ ), weeding ( $\bar{x} = 2.98 \pm 0.90$ ), rodents and birds control ( $\bar{x} = 3.39 \pm 0.67$ ), control of diseases ( $\bar{x} = 3.27 \pm 0.77$ ), hiring of labourer ( $\bar{x} = 3.73 \pm 0.54$ ) were all high across the 12 major pre-planting operations.

**Table 1: Level of contributions of men and women to decision making in pre-harvest rice farming operations**

Pre-harvest rice farming operations	Men Mean ( $\bar{x}$ )	Women Mean ( $\bar{x}$ )
Selection of suitable land for rice farming	3.94** (0.24)	1.80* (0.71)
Land clearing	3.78** (0.64)	2.36* (0.55)
Stumping	3.54** (0.55)	2.77** (0.74)
Preparation of farm land for planting	3.27** (0.60)	2.57** (0.58)
Constructing furrows	3.65** (0.58)	2.45* (0.80)
Sourcing for suitable planting materials	3.87** (0.40)	1.78* (0.71)
Planting/transplanting of rice to the field	3.57** (0.73)	2.81** (0.71)
Fertilizer application	3.54** (0.68)	2.42* (0.77)
Weeding of rice farm	2.98** (0.90)	2.93** (1.01)
Rodents and birds' control	3.39** (0.67)	2.59** (0.55)
Control of spread of diseases	3.27** (0.77)	2.42* (0.79)
Hiring labourers for farm work	3.73** (0.54)	2.20* (0.88)
<b>Pooled Mean</b>	<b>3.54** (0.18)</b>	<b>2.43* (0.24)</b>

Figures in parentheses represent the standard deviation.

\* = Low contributions to farming decision.

\*\* = High contribution to farming decision.

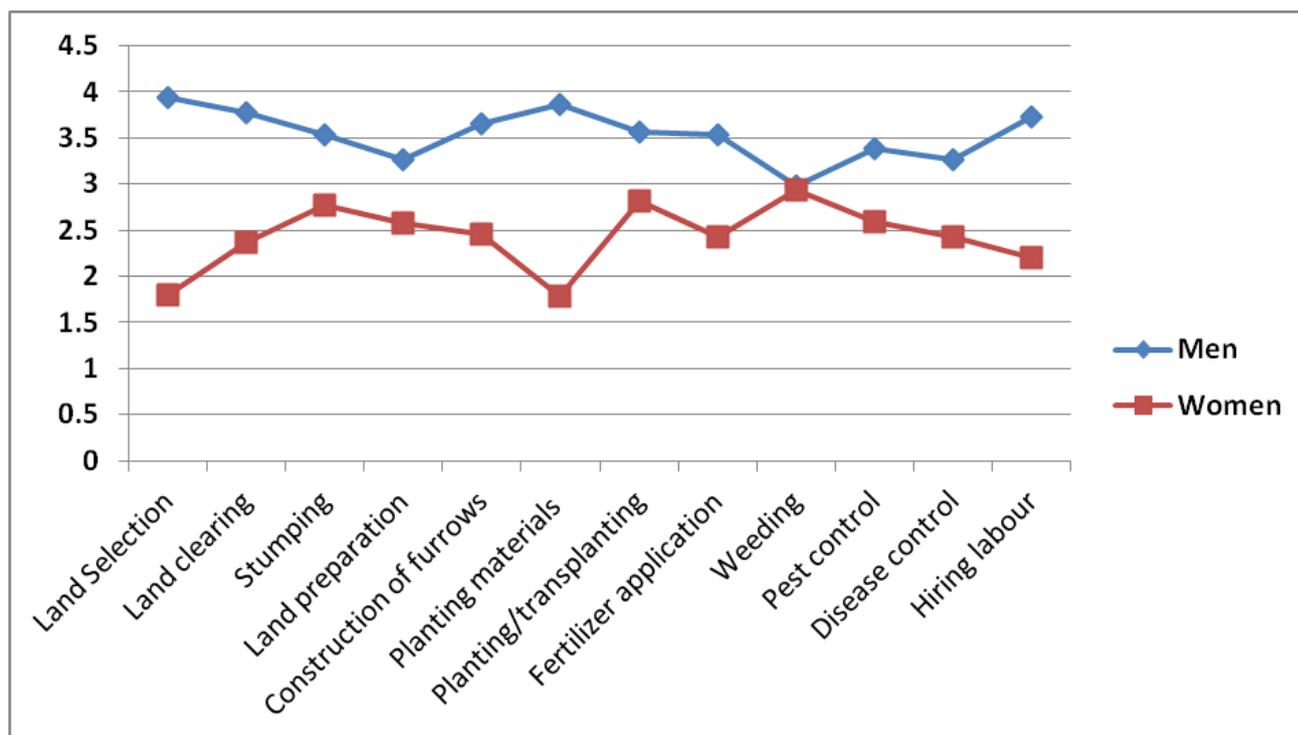
**Source: Field Survey, 2021.**

On the other hand, the mean ratings of the contributions of women to decision making were high on only five out of the 12 identified major pre-planting operations which include: stumping ( $\bar{x}=2.77\pm0.74$ ), land preparation for planting ( $\bar{x}=2.57\pm0.58$ ), planting/transplanting ( $\bar{x}=2.81\pm0.71$ ), weeding of rice farm ( $\bar{x}=2.93\pm1.01$ ) and rodents and birds control ( $\bar{x}=2.59\pm0.55$ ). The mean contributions of women to decision making were low on the remaining seven pre-planting operations. The results indicates that the pooled mean contributions of men to decision making in rice pre-planting operations is high ( $\bar{x}=3.54\pm0.18$ ) while that of the women is relatively low ( $\bar{x}=2.43\pm0.24$ ). This result of this study agreed with that of Ugwu (2019) reported that women play significant roles in the agricultural labour force, although their efforts tend to be trivialized, in even decision making. The findings of this study corroborated that of Sapkota, et al, (2018) that majority of financial decision on purchase/sale of land (78%), land preparation (61%), irrigation practices (65%), application of chemical fertilizers (51%), the use of pesticides (55%),

marketing of farm produce (64%) and utilization of farm income (70%) were made by men.

Some socioeconomic factors are responsible for the patriarchy nature or perceived male dominance in resource allocation among African society. Omeire (2016) stated that social, political, religious and economic factors discriminate against rural women and their access to education; hence reducing their contributions to resource allocation activities and farm household decision making. Ugwu (2019) equally affirmed that there still exists an agricultural information gap and decision making between female and male farmers.

The differences in contributions of men and women to decision making at pre-harvest rice farming operations was further demonstrated in Figure 1. The figure shows steady higher mean contributions of men to decision making across the pre-harvest stage and relatively lower contributions by women.



**Figure 1: Mean distribution of the contributions of men and women to farming decisions in pre-harvest rice farming operations.**

Source: Field Survey, 2021.

## Difference in Contributions of Men and Women to Decision Making in Pre-harvest Operations

Table 2 shows that there was significant difference in the levels of contributions of men ( $\bar{x} = 3.54 \pm 0.18$ ) and women ( $\bar{x} = 2.43 \pm 0.24$ ) to decision making in pre-harvest rice production operations implying that men participated in decision making at pre-harvest rice production activities than women.

**Table 2: Difference in the mean contributions of men and women to decision making in pre-harvest rice farming operations.**

Sex	n	$\bar{x}$	SD	DF	Std. Error	Z- Cal
Men	120	3.54	0.18	238	0.028	6.59*
Women	120	2.43	0.24			

Note: \* =  $p \leq 0.05$ .

Lambrecht and Karoff (2020) submitted that men are always more likely to participate in decision making on production, types of crops, and input purchases than women as the women also participate less in decisions regarding income from agriculture relative to men.

## Contributions of Men and Women to Decision Making in Post-harvest Operations.

Table 3 shows that the mean ratings of the contributions of men to decision making were high on: harvesting ( $\bar{x} = 2.62 \pm 0.81$ ), transportation ( $\bar{x} = 3.78 \pm 0.43$ ), sun-drying ( $\bar{x} = 2.65 \pm 0.74$ ) and milling ( $\bar{x} = 3.53 \pm 0.59$ ). The mean contributions of men to decision making were low on the remaining eight post-planting operations. On the other hand, the mean ratings of the contributions of women to decision making on harvesting ( $\bar{x} = 3.31 \pm 0.65$ ), stockpiling harvested stalk paddy ( $\bar{x} = 3.60 \pm 0.67$ ), drying of harvested stalk ( $\bar{x} = 3.72 \pm 0.55$ ), threshing ( $\bar{x} = 3.87 \pm 0.34$ ), packing threshed paddy ( $3.67 \pm 0.62$ ), transportation ( $2.79 \pm 0.78$ ), cleaning of the paddy/winnowing ( $\bar{x} = 3.43 \pm 0.73$ ), parboiling clean paddy ( $\bar{x} = 3.81 \pm 0.41$ ), soaking parboiled paddy ( $\bar{x} = 3.90 \pm 0.30$ ), sun-drying ( $\bar{x} = 3.45 \pm 0.68$ ), rice milling ( $\bar{x} = 2.67 \pm 1.01$ ) and marketing ( $\bar{x} = 3.47 \pm 0.54$ ) were all high across the 12 identified post-planting rice farming operation. The results also indicates that the pooled mean contributions of men to decision making in rice farming harvesting and post-planting operations is relatively low ( $\bar{x} = 2.54 \pm 0.48$ ) compared to that of the women ( $\bar{x} = 3.47 \pm 0.16$ ) which is high. This infers that women play dominant roles in decision making in harvesting and post-harvest farm operations.

**Table 3: Level of contributions of men and women to decision making in harvest and post-harvest rice farming operations**

Harvest/post-harvest rice farming operations	Men Mean ( $\bar{x}$ )	Women Mean ( $\bar{x}$ )
Harvesting of matured rice from the field	2.62** (0.81)	3.31** (0.65)
Stockpiling harvested stalk paddy	2.22* (0.72)	3.60** (0.67)
Drying of harvested stalk	1.94* (0.50)	3.72** (0.55)
Threshing of the dried stalk paddy	2.32* (0.71)	3.87** (0.34)
Packing threshed paddy in jute sack for storage	2.01* (0.74)	3.67** (0.62)
Transporting threshed paddy	3.78** (0.43)	2.79** (0.78)
Cleaning of the paddy (winnowing)	2.48* (0.59)	3.43** (0.73)
Parboiling clean paddy	1.99* (0.89)	3.81** (0.41)
Soaking parboiled paddy	2.48* (0.88)	3.90** (0.30)
Sun drying	2.65** (0.74)	3.45** (0.68)
Milling the rice	3.53** (0.59)	2.67** (1.01)
Marketing of rice	2.45* (0.64)	3.47** (0.54)
<b>Pooled Mean</b>	<b>2.54** (0.48)</b>	<b>3.47** (0.16)</b>

Figures in parentheses represent the standard deviation.

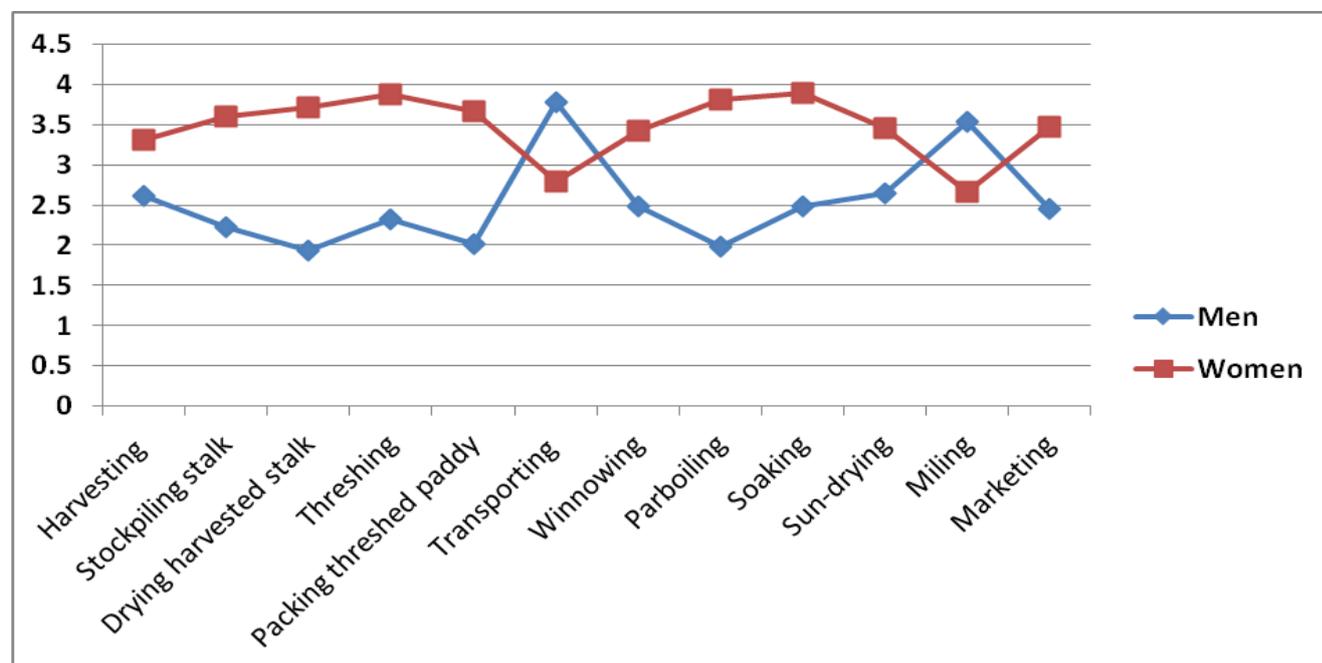
\* = Low contributions to farming decision.

\*\* = High contribution to farming decision.

**Source: Field Survey, 2021.**

The high contribution of women in decision-making in harvesting and post-harvest operation in rice farming is in line with expectations. Bojjagani and Kalal (2021) reported that post-harvest activities such as drying, grading, trampling, processing, labeling and marketing are usually dominated and performed by women. Saikia, et al (2020) equally noted that the roles of rural women in post-harvest activities especially in the drying, storage and cleaning of grain are particularly significant. This could explain the reason for their higher contributions to decision making in post-harvest rice farming operation.

Figure 2 shows steady higher contribution of women in post-harvest decision-making and the relatively low contributions by men. Women's significant contribution to post-harvest decision-making may be related to their higher role in harvesting and post-harvest farm operations. Ugwu (2019) reported that rural women take part in income-generating activities, particularly in the processing of agricultural produce, and decision making in such activities.



**Figure 2: Mean distribution of the contributions of men and women to farming decisions in post-harvest rice farming operations.**

Source: Field Survey, 2021.

**Difference in Contributions of Men and Women to Decision Making in Post-harvest Operations**

Table 4 reveals that there was significant difference in the levels of contributions of men and women to decision making in post-harvest rice farming operations. However, the mean value for the men ( $\bar{x} = 2.54 \pm 0.48$ ) was low while that of women ( $\bar{x} = 3.47 \pm 0.16$ ) was relatively higher than that of the men.

**Table 4: Difference in the mean contributions of men and women to decision making in post-harvest rice farming operations.**

Sex	N	$\bar{x}$	SD	DF	Std. Error	Z- Cal
Men	120	2.54	0.48			
Women	120	3.47	0.16	238	0.017	4.58*

Note: \* =  $p \leq 0.05$ .

This result explains the fact that both men and women contribute to decision making in post-harvest operation, but women play higher role than men. The findings of Kumari and Sandhvi (2016) showed that preservation of grains and seeds, winnowing and harvesting were the major post-harvest farm operations mainly

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performed by farm women. Sapkota, et al (2018) in a study found that women's roles in decision making were limited in sowing/transplanting, application of farm yard manure but were significant in weeding and post-harvest handling of crops.

## Conclusion and Recommendations

Men's contributions to decision-making in pre-harvest rice production activities were higher than those of women. There were higher women's contributions to decision-making throughout the harvest and post-harvest rice farming activities. There is clearly division of labour and decision-making by both men and women in rice farming operations. Although men seems to be more responsible for decision making on farm operations before harvesting even when women provided the bulk of the labor force. Women play the leading roles in decision making regarding rice post-harvest activities in their households.

There is need for improved government commitment to helping farmers gain more access to farm-related information for making more informed decision in their farming enterprise. In addition, there is need for formulation of gender sensitive policies that will help to address the specific needs of men and women farmers such as improved education and training and land tenure reform to make women have more access to land for efficiency in farm resource allocation through quality decision making.

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## Author contribution:

TA. (40%) Developed the concept wrote the background, objectives, designed questionnaire, data coding, analyzed data, report writing.

ASC. (30%) gathering of relevant materials, modified the specific objectives, designed the methodology, designing the questionnaire, data collection and coding, interpretation of result, discussion and proofread the manuscript.

EOL. (30%) gathering of materials, designed the methodology, modified the specific objectives, type the questionnaire, data collection and coding, report writing and proofread the manuscript

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