Knowledge of rural women in some environmental issues in Duhok Governorate, Kurdistan region of Iraq

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Abstract
The main objective of this study is to identify the rural women's knowledge in some environmental domains in Duhok Governorate, Kurdistan region of Iraq. Area random sampling was used to select the research sample which is (507) rural women. A questionnaire was designed to collect the research data, which is consisted of two parts, the independent variables and knowledge test consisted of (47) items distributed on four domains (Home waste management, Sustainable agriculture, Sustainable methods of using and conservation of forest, and Rural tourism). Experts and content validity were used to achieve the validity of the knowledge test, and Kurder-Richardson21 formula was used to measure the reliability of it, it is value was (0.777). The data was analyzed with SPSS program. The results showed that knowledge level of the respondents in all the studied environmental domains is medium tends to low. Home waste management domain ranked the first ($\bar{X}$=7.719). While rural tourism domain ranked the last ($\bar{X}$=4.888). The result also showed that there is significant correlation between the knowledge level of respondents and each of the following variables (Level of education, Satisfaction with services in the village, Agricultural information sources, and Cultural openness). While there is no significant correlation with :(Age, Material status, Current work, and Participation in family decision –making). The research included some conclusion and recommendations.

Keywords: Knowledge level, Rural women, Environmental issues.

Introduction:
The ecological problems have been significantly increasing at all levels (Ruzaiq, 2007). The environment problem came up as an inevitable result of the policies pursued to achieve economic and social development (Al-Saied, 2002).
The issue of environmental protection and preservation and natural resources has become a national and religious duty that requires cooperation of Governmental, non-governmental and civil efforts. The process which starts with setting legislations that prevent environmental damage and pollution and finding appropriate mechanisms to activate these legislations and laws. On the other hand, directing attention to change incorrect behaviors of community members and raise their environmental awareness.

Some scientists think that a thorough examination and grasp of human environmental knowledge and attitudes will provide the answer to this conundrum. Prior research has also indicated the necessity to investigate farmers' attitudes and knowledge regarding the natural environment, which is the primary goal of this study.

Little is known about rural women's personal motives for engaging in and demonstrating pro-environmental behavior, despite the fact that they play a significant role in the sustainable use and management of the environment and natural resources.
If rural women's behavior is the primary determinant of how they interact with the environment and exploit its resources, there is no doubt that education plays an important role in rationalizing this behavior in order to reduce the risks associated with excessive use of available environmental resources (Badola, et al. ,2012).

Environmental awareness has become important area in agricultural extension work. There is scarcity of research in the area of human behavior in the rural areas of Kurdistan region and Iraq in general. Therefore, this research will be conducted to answer the following question: What knowledge do rural women in the targeted area have in the studied environmental dimensions? What are the factors that influencing the knowledge of rural women in these studied domains?. This improved understanding of the rural women environmental behavior, and will enable agricultural extension and policymakers to develop more effective policy tools, and engagement initiatives to enhance sustainable environmental and natural resource use and management.

The main objective of this study is to identify the rural women's knowledge in some environmental domains(Rural tourism, Sustainable methods of using and conservation of forests, Sustainable agriculture, and Home waste management).

Materials and Methods:

This study deals with Duhok Governorate, which is located in the northern part of Kurdistan region of Iraq. The target population consist of all rural women over (18) years old in Duhok Governorate. Area random sampling was used to select the sample of research which is (507) rural women, as shown in table (1).

Table (1): The population and sample size of the study

No.	Districts	Sub-Districts	Villages	Total number	Sample No.	%
1	Akre	Bijel	Zanta	85	66	88
2		Dinarte	Girbishe	207	117	60.622
3	Zakho	Rizgari	Shinava	80	56	80
4		Batifa	Girebiye	66	50	89.286
5	Amedi	Sersink	Ashawa	143	100	75.188
6		Diralok	Harika	181	118	69.006
Total				762	507	72.64%

(The number of rural women over 18 years was obtained from Mukhtar records in villages)

A questionnaire was designed to collect the research data which is consisted of two parts (Independents variables, Knowledge test).the knowledge test consisted of (56) items of two types (True or False, and Multiple choice). (9) items were excluded according to the difficulty index and discrimination index and (47) items remained for the knowledge test. Experts' validity for the questionnaire was used. In addition to, the content validity by preparing a test specification table (Test map). To measure the reliability of the knowledge test , Kurder-Richardson-21 formula was used. It is value was (0.777). The data was analyzed by using SPSS 18. Program, and a number of statistical methods were used such as : (Kolmogorov-Smirnov test (K-S), Kuder-Richardson21, Percentages from frequency, Range, Standard deviation, Weighted mean, Discrimination index, Difficulty index, chi-square, Coefficient of contingency).

Result & Discussion:

1: Identifying the knowledge level of rural women in some environmental issues in general:

The results of table (2) show the knowledge level of rural women in some environmental issues in all the studied domains.

Table (2) shows distribution of respondents according to their knowledge level in all domains

Knowledge level	Frequency	Percentage %
Low(8-20)	189	37.278**%**
Medium(21-33)	273	53.846**%**
High(34-46)	45	8.876**%**
Total	**507**	**100%**

The results in table (2) show that the knowledge level of the respondents is medium tends to low. This may be due to that the vast majority (98.6%) of the respondents came with low and medium cultural openness as shown in table (5).

2.Arranging the environmental domains according to the knowledge level of respondents:

The table(3) show the rank order of the environmental domains according to the knowledge level of respondents.

Table (3) the rank order of the environmental domains according to the knowledge level of respondents:

Domains	Mean	Std.Deviation	Rank
Home waste management	7.719	2.707	1
Sustainable Agriculture	5.475	2.527	2
Sustainable methods of using and conservation of forests	5.398	2.479	3
Rural tourism	4.888	2.175	4

As show in table(3), rural tourism domain ranked last domain. The reason may be due to the lack of adequate interest of government institutions towards attention to the rural tourism.

3. Knowledge level of the respondent in each domain:

Table (4) the knowledge level in each domain.

Home waste management domain		
Knowledge categories	**Frequency**	**%**
(0-4)Low	**63**	**12.426**
(5-9)Medium	**312**	**61.538**
(10-14)High	**132**	**26.036**
Total	**507**	**100%**
Sustainable agriculture domain		
Knowledge categories	**Frequency**	**%**
(0-3)Low	**122**	**24.063**
(4-7)Medium	**278**	**54.832**
(8-11)High	**107**	**21.105**
Total	**507**	**100%**
Sustainable methods of using &conservation of forests domain		
Knowledge categories	**Frequency**	**%**
(0-3)Low	**126**	**24.852**
(4-7)Medium	**281**	**55.424**
(8-11)High	**100**	**19.724**
Total	**507**	**100%**
Rural tourism domain		
Knowledge categories	**Frequency**	**%**
(0-3)Low	**63**	**28.205**
(4-7)Medium	**312**	**58.186**
(8-11)High	**132**	**13.609**
Total	**507**	**100%**

From table(4) we notice that the majority of the respondents have medium tends to low level of knowledge in three domains out of four. This result may be due to week exposure of the respondents to information sources dealing with environment, and most of the respondents have low level of education which plays an important role in educating local community about these domains of environment.

4.The correlation between the knowledge level of rural women in some environmental domains and selected independent variables:

To determine the correlation between the knowledge level of the respondents as a dependent variable and some independent variables, the coefficient of contingency (rc) was used. The results of the correlation are shown in table (5).

Table (5) the correlation between knowledge level of the respondents and selected independent variables.

Knowledge level **Independent variables**	**(8-20) Low**	**%**	**(21-33) Medium**	**%**	**(34-46) High**	**%**	**X^2**	**rc**
1.Age **(18-39)Years** **(40-61)Years** **(62-83)Years**	**128** **53** **8**	**25.247** **10.454** **1.578**	**180** **82** **11**	**35.503** **16.174** **2.170**	**27** **13** **5**	**5.325** **2.564** **0.986**	**5.654**	**0.105 N.S.**
2.level of education **Illiterate** **Primary school** **High school** **Institute or college**	**48** **28** **25** **88**	**9.467** **5.523** **4.931** **17.357**	**91** **26** **43** **113**	**17.949** **5.128** **8.481** **22.288**	**26** **4** **1** **14**	**5.128** **0.789** **0.197** **2.761**	**22.045**	**0.204***
3.Marital status **Single** **Married** **Widow** **Divorced**	**65** **114** **6** **4**	**12.821** **22.495** **1.183** **0.789**	**86** **172** **15** **0**	**16.963** **33.925** **2.959** **0.000**	**17** **27** **1** **0**	**3.353** **5.325** **0.197** **0.000**	**5.986**	**0.109 N.S.**

4.Current work **House keeper** **Governmental job** **Private job**	 **154** **23** **12**	 **30.375** **4.536** **2.367**	 **246** **23** **4**	 **48.521** **4.536** **0.789**	 **43** **2** **0**	 **8.481** **0.394** **0.000**	**11.479**	**0.148 N.S.**
5.Satisfaction with services in the village **(8-13)Low** **(14-19)Medium** **(20-25)High**	 **0** **38** **151**	 **0.000** **7.495** **29.783**	 **1** **106** **166**	 **0.197** **20.907** **32.742**	 **0** **30** **15**	 **0.000** **5.917** **2.959**	**44.622**	**0.285****
6.Agricultural information sources **(12-21)Low** **(22-31)Medium** **(32-41)High**	 **53** **122** **14**	 **10.454** **24.063** **2.761**	 **152** **108** **13**	 **29.980** **21.302** **2.564**	 **34** **10** **1**	 **6.706** **1.972** **0.197**	**47.421**	**0.293****
7.Cultural openness **(10-16)Low** **(17-23)Medium** **(24-30)High**	 **78** **107** **4**	 **15.385** **21.105** **0.789**	 **158** **112** **3**	 **31.164** **22.091** **0.592**	 **37** **8** **0**	 **7.298** **1.578** **0.000**	**40.075**	**0.270****
8.Participation in family decision-making **(13-20)Low** **(21-28)Medium** **(29-36)High**	 **12** **140** **37**	 **2.367** **27.613** **7.298**	 **27** **177** **69**	 **5.325** **34.911** **13.609**	 **1** **37** **7**	 **0.197** **7.298** **1.381**	**8.772**	**0.130 N.S.**

As shown in table(5),four variables out of eight have significant correlation with knowledge level . The level of education has a significant correlation with knowledge level, this result may be due to the individuals who have gone further in their schooling expected to be able to tackle new information about environment, and this result agree with Al-hafidh's 2005 study, and it is not in line with (Kaiser, et al.,2007) study. Satisfaction with services in the village also has a significant correlation with knowledge level, this may be due to that the high degree of satisfaction pushes the respondents to know more about studied domain, and this result agree with study of (Ahmed,2021). Agricultural information sources have a correlation with knowledge level, this may be due to the fact that increased sources of information make rural women more accessible knowledge, and acquire adequate knowledge about environmental issues, and this result agree with (Al-Janabi,2012) , (Khalil and Jassim 2018). Cultural openness also has a significant correlation with knowledge level, one of the most important challenges of cultural openness is to find a balance between cultural openness and knowledge sharing. This result is consistent with the study of (Selim,2015).

Conclusions:

The results show that the vast majority of respondents have a medium level of environmental knowledge , and they do not have sufficient knowledge in the studied environmental domains, they did not apply sustainable methods in the using and conservation of forests, and there is a need for rural women to know the application of sustainable agriculture, and agricultural extension in the region does not focus on sustainable agricultural methods in their extension activities, and the high level of knowledge of rural women in home waste management may be due to the activities of media and non-governmental organization in the region.

Recommendations:

The necessity of participation of rural women in NGOs, working on developing rural women creative skills, and how to optimally use modern technology in social life, raising the level of knowledge of rural women. more training and rehabilitation programs in the environmental issues can be implemented by governmental and non-governmental institutions, raising the degree of family empowerment in the economic domain, activating the role of the mass media and civil society institutions in adopting awareness and educational programs and workshops, focusing on training agricultural extension worker to advance their performance and skills in the use of sustainable agriculture applications and providing specialized extension programs in the domains of environment.

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