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**21 RURAL WOMEN'S KNOWLEDGE, ATTITUDES, AND PRACTICES (KAP) PERTAINING TO HIGHLY PATHOGENIC AVIAN INFLUENZA (HSN1 HPAI) IN QALUBIYA GOVERNORATE, NILE DELTA, EGYPT**

*Emad M. El-Shafie, Radwa G. Elsayed*

*Faculty of Agriculture, - Cairo University, Egypt.*

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**21.1 Introduction**

Rural household poultry production is indispensable, since it plays a vital role in gender equality, food security, animal protein availability, income, and employment generation. Moreover, rural women, especially those in poor rural families, generate most of their income from raising birds in order to cover the basic life expenses. Thus, the rural poultry sector is important for the overall Egypt's development and specifically for poor landless rural households (Hosny, 2006). Household poultry production has an essential contribution in GDP, since it provides nearly 35% of the total chicken meat production, 90% for other poultry meats and 35% of the total egg production in Egypt (FAO, 2009a). Yet, poultry production has dropped significantly as a result of Avian Influenza (AI), which is known to be a birds' disease, but recently it has become of a zoonotic nature.

The seriousness of the disease stems from the possibility of human to human transmission that might result in a global human influenza pandemic if not contained in time (Martin et al, 2006). Thus, AI has attracted considerable public and media attention because the virus involved has caused massive economic losses, hardships to poor farmers, human deaths and a threat of a human influenza pandemic (FAO, 2009b).

Egypt represents the third highest countries at risk. Its first outbreak of AI (HSN1) in domestic poultry was reported in Feb., 2006, and the first human case was confirmed in a 30-years-old rural woman from Qalubiya Governorate, in the Nile Delta, in March 2006 (WHO, 2010). Through the period from 2006, since the first confirmed human case, to the end of 2010, the total confirmed cases amounted to 119 and the number of deaths reached 40 cases; most of them were women and children (WHO, 2011). In May and June 2010, 50 (HSN1 HPAI) outbreaks were reported in poultry, 47 of these outbreaks (94%) were reported from the household poultry sector. Despite a vigorous initial response to the disease, including the culling of over 40 millions birds, Egypt is considered as an endemic country where outbreaks are regularly reported from different Governorates (FAO, 2010).

In order to manage the risk of AI, it is necessary to assess, and help changing rural women's KAP concerning poultry rearing. Since K and A are the basic driving forces of individual actions (P), as they represent the ground upon which people tend to behave or act in a specific life activity or situation. Therefore, understanding the levels of K, A, and P will enable more efficient communication and awareness campaigns as they will be tailored more appropriately to their needs (Kaliyaperumal, 2004). KAP studies' results can be used to analyze which specific elements of the technology package are not known to the majority of target beneficiaries, what are the reasons for their negative attitudes, how and why they have practiced recommended technologies inappropriately (Adhikarya, 1997). However, changing or improving individuals' K, A, or P alone is unavailing; the ability to promote, integrate, and use KAP together is critically needed for successful change (Blanchard, & Thacker, 2009).

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## 21.2 Problem Statement

One of the most important causes of Avian Influenza endemic in Egypt is the insufficiency of rural women's KAP pertaining to that disease. Consequently, the problem of this study is to measure the levels of rural women's KAP, and to investigate the inter-relationships between each of the respondents' K, A, P and the studied independent variables.

## 21.3 Objectives

The overall objective of the study is to assess Rural Women's KAP pertaining to H5N1 HPAI in Banha District, Qalubiya Governorate. The specific objectives are to:

- Measure the degree of rural women's KAP pertaining to HPAI H5N1.
- Investigate the relationships among the respondents' K, A and P.
- Identify the relationships among the respondents' K, A, P and the studied independent variables.

## 21.4 Methodology

This study was conducted in the local unit of Sandanhour (where a confirmed female human case of AI was reported in one of its villages), Qalubiya Governorate (one of the highest Governorates where confirmed human cases of HPAI H5N1 have been reported in Egypt). Since the number of rural females raising house poultry was neither documented nor available, the total number of rural families (9831) in the studied area was considered as the study population. Accordingly, a simple random sample of rural females (the main category handling house poultry), reaching 370 females, was drawn from the study population. Due to the sensitivity of AI issue, that was a major obstacle that abstained several rural women from cooperating and responding positively to the personal interview, only 286 rural females were personally interviewed.

Data was collected during personal interviews with each of the selected females by using a questionnaire designed and pre-tested for achieving the study objectives. To measure rural women's KAP, an index was designed for each variable. The K index included 56 information questions, representing the basic knowledge related to the disease, its symptoms on both poultry and human, and its means of transmission; one score was assigned to each correct answer, and zero for the unknown or wrong answer. The theoretical K scores ranged from 0 to 56. The A index contained 22 attitude statements. The scores of: 5, 4, 3, 2, and 1 were assigned to each statement responses: strongly agree, agree, not identified, disagree, and strongly disagree, respectively, for positive statements and vice-versa for the negative ones. The theoretical A scores ranged from 22 to 110. P index included 32 recommended practices; one score was assigned to each practice if applied by the respondent and zero if not applied. The theoretical P scores ranged from 0 to 32. Finally, the total scores for each of K, A, and P were calculated. For the purposes of statistical analysis (e.g. for comparing and addition of the three variables (KAP)), the scores were converted into percentages.

## 21.5 Results & discussion

### 21.5.1 Respondents' characteristics (table 1)

- About 80% of the respondents were married.
- More than half of the respondents (56%) fall in the medium age category (30 to 49 years), and 28% were old (fifties and above).

- More than one third of the respondents (35.3%) were illiterate, and about 45% were better educated (completed high school and university graduates).
- Slightly more than one half of the respondents (51%) have medium-sized families (4 – 6 persons).
- The majority of the respondents (82%) were rearing more than one kind of poultry.
- About 61% of the respondents had no domestic animals, and about 39% had at least one kind of domestic animals.
- More than half (51.7%) of the respondents were land owners, compared with 36% had a small land holding (less than one feddan).

Table (1) Distribution of Respondents according to their characteristics (N=286)

Respondents' Characteristics	%	Respondents' Characteristics	%		
Marital Status	Single	Age	(20 – 29)	15.4	
	Married		(30 – 39)	25.9	
	Widow		(40 – 49)	30.4	
			(50 & above)	28.3	
Respondents' Educational Level	Illiterate (Read & Write – Prep.)	Diversity of poultry	One Kind	17.8	
	(High school & above)		44.8	Two Kinds	29.4
			44.8	Three & above	52.8
Family Size	Small (1 – 3)	Diversity of domestic animals	Don't have	60.8	
	Medium (4 – 6)		One kind	20.3	
	Large (7 & above)		16.5	Two & above	18.9
Farm size/feddan (1 feddan = 1.038 acre)	Landless			48.3	
	Small (Less than 1)			36.3	
	Medium (1-less than 2)			11.2	
	Large (2 & above)			4.2	

#### 21.5.2 Respondents' KAP

Generally, the respondents' knowledge was insufficient, their attitudes need to be improved, and their practices, as could be expected, were considerably low (table 2). KAP scores were converted to percentages and then classified into five categories: very low, low, medium, high and very high. The respondents' K actual range was 7 - 50, with an average of 29.4 and a Standard Deviation (SD) of 8.3. Respondents' A actual range was 56 - 93, with an average of 72.6 and SD of 6.5. The respondents' P actual range was 28 - 84, with an average of 52 and SD of 10.7. The respondents' total (KAP) scores actual range was 36 - 67, with an average of 51.3 and SD of 6.1.

The majority of the respondents (78%) had considerably insufficient K levels concerning the basic knowledge about the disease, its symptoms on both poultry and human, and its means of transmission. The study revealed that 50%, 21% and 7% of them had medium, low, and very low levels, respectively. Regarding A, nearly three fourths (74%) of the respondents had very low, low and medium levels of A, respectively, compared with 26% had high and very high levels of A. Concerning P, the majority of the respondents (83%) had low and medium levels of P, compared with only 17% had high and very high levels of P. Consequently, the respondents' total KAP levels were considerably low, since about 62% had very low, low and medium levels. These results reveal an urgent need for improving rural women's KAP pertaining to (HPAI H5N1), in a way that could eventually result in enhancing them to follow the bio-

security measures which safeguard them from being infected with Avian Influenza and, thereby, minimizing the number of deaths.

Table (2) Distribution of respondents according to their scores in K, A, P and total KAP

	KAP (%)	N=286	Freq.	%	Range	X̄	SD
K	V.L	(7 - < 16)	19	6.6	43	29.35	8.33
	L	(16 - < 25)	59	20.6			
	M	(25 - < 34)	143	50.0			
	H	(34 - < 43)	53	18.5			
	V.H	(43 - 50)	12	4.3			
A	V.L	(56 - < 63)	17	5.9	36	72.63	6.54
	L	(63 - < 70)	82	28.7			
	M	(70 - < 77)	112	39.2			
	H	(77 - < 84)	60	21.0			
	V.H	(84 - 93)	15	5.2			
P	V.L	(28 - < 39)	22	7.7	56	52.01	10.67
	L	(39 - < 50)	95	33.2			
	M	(50 - < 61)	121	42.3			
	H	(61 - < 72)	35	12.3			
	V.H	(72 - 84)	13	4.5			
KAP	V.L	(36 - < 42)	14	4.9	31	51.33	6.136
	L	(42 - < 48)	72	25.2			
	M	(48 - < 54)	106	37.1			
	H	(54 - < 60)	69	24.1			
	V.H	(60 - 67)	25	8.7			

#### 21.5.3 The relationships among K, A, and P

Statistically significant and positive relationships, at 0.01 level, were found among rural women's KAP pertaining to HPAI H5N1. The Pearson correlation coefficients among the respondents' total scores of K, A, and P were as follows: ( $r = 0.187$ ) between K and A; ( $r = 0.228$ ) between K and P; ( $r = 0.371$ ) between A and P.

These statistically significant and positive correlations indicate the inter-dependence between the three components in determining rural women's behavior. This inter-dependence implies that any change in one of the three components will, eventually, affect the others, and in turn, improving rural women's knowledge and/or attitudes could improve their practices.

#### 21.5.4 The relationships between each of the respondents' K, A, P and the studied independent variables

As shown in (table 3) there are variations in the significance, magnitude and direction of the relationships between each of the K, A, P scores and some of the studied independent variables. The following statistically significant and positive correlation coefficients, at 0.01 level, were found:

- Between respondents' educational level and: K ( $r = 0.203$ ), A ( $r = 0.206$ ), P ( $r = 0.167$ ).

The following statistically significant and negative correlation coefficients were found:

- Between attitudes ( $r = -0.152$ ) and respondents' age, at 0.01 level;
- Between practices and the diversity of poultry ( $r = -0.139$ ), which could contribute to the further spread of the virus since raising different kinds together could increase the possibility of the virus transmission; Between practices and the diversity of domestic animals ( $r = -0.131$ ), at 0.05 level, which could indicate that the respondents who didn't have domestic animals were more eager to follow the bio-security measures that enable them to keep their poultry safe;
- Between attitudes and both the diversity of domestic animals ( $r = -0.138$ ) and the number of males in the family ( $r = -0.119$ ), at 0.05 level.

Table (3) Pearson correlation coefficients among the studied variables

Independent variables	K	A	P
Respondents' age	-0.078	-0.152**	-0.068
Respondents' education by years	0.203**	0.206**	0.167**
No. of females in the family	-0.009	-0.006	-0.080
No. of males in the family	-0.040	-0.119*	-0.007
Family size	-0.033	-0.084	-0.058
Size of land holding	0.009	0.077	0.066
Diversity of poultry	-0.081	-0.059	-0.139*
Diversity of domestic animals	0.036	-0.138*	-0.131*

Conclusions: communication campaigns, in the insufficient and KAP gaps concerning AI are needed to target all rural women particularly the illiterate, medium and old age categories and those who are rearing more than one kind of poultry.

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