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The Effective Factors In Nutritional Management Knowledge And A Proper Educational Plan For Broiler Farmers, A Case Study in Garmsar Township

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Abstract

The study was conducted to determine the effective factors in nutritional management knowledge and design a proper educational plan for broiler farmers in Garmsar Township. The used methodological approach was descriptive-correlation. Eighty-eight questionnaires were collected and analyzed of 98 broiler farmers active in Garmsar. The content and face validity of the questionnaires and reliability of analysis were respectively specified and calculated according to guide, and Cronbach Alpha coefficient was calculated α=0.86 for the whole using SPSS software. Results indicated that role of extension methods in increasing the knowledge was very low to very high between the different methods. The correlation analysis indicated significant and positive relationships for farm capacity, income level, exhibitive educational methods and survey of modern farms with thefarmers' knowledge. Results of multiple regression analysis as step by step indicated that two variables of exhibitive and survey educational methods explain significantly 56.2 percentages of the total variance. Therefore, the regression equation was: the plan = 0.664 (Exhibitive method) + 0.292 (Survey method). In conclusion, best educational plan is education of appropriate literatures with emphasis on the priorities via best methods especially exhibitive and survey methods.

Keywords:
Nutritional management knowledge, Appropriate educational program, Broiler farmers, Garmsar

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INTRODUCTION

According to the latest UN report, approximately 800 million people throughout world are below the poverty line, and it is increasing day by day. Studies show that majority of people's foods have lack of protein, especially animal protein. Animal protein has an essential role in human nutrition; therefore, its quality and consumption amount must be sufficient (Niko Goftar, 2003).

In recent years, chicken meat has widely been used for human nutrition and in supplying the protein requirement. Raising the chicken for meat production has some especial advantages due to the rapid growth, ease of feeding, use of a closed space, having the lower conversion coefficient than other protein products, as well as provides materials required for the human body (Shirani *et al*., 2007).

Nowadays, management and nutrition are the most important factors in poultry industry due to reduction of production costs, supply of products with higher quality for the market, and prevention of high environmental pollution causing by imbalance or low bioavailability of nutrients in their feeds (Pope and Emmert, 2001). Feed is one of the important factors in broiler rearing because it allocates the most production costs to itself (Havenstein *et al*., 2003). One method for evaluating feed and optimum production in the broiler farm is control of Feed Conversion Ratio (FCR) in broilers. Therefore, any improvement in FCR can lead to reduction of the costs and increase of economic benefit (Sheppard, 2004).

In comparing to other countries, most of the poultry farms in Iran have very high FCR due to disregarding of proper nutritional principles and lack of good nutritional management (such as usage of inappropriate methods of feedstuffs storage and conservation; principles of preparing and formulation of feed; usage of feeds having inappropriate amounts of energy, protein, amino acid, minerals and vitamins in feed regarding to chick's age, weight and body; selecting the feeding programs and feed additives, and est.).

To achieve maximum efficiency in poultry production, it is necessary that its prerequisites be identified. With respect to more importance of nutritional management in poultry production, increasing nutritional management knowledge of poultry farmers is one of the important prerequisites that it must be educated.

Process of assessing educational needs of agricultural beneficiaries is one of the most difficult activities for designing educational-extension programs in agricultural section, because cognition and determination of individual activities nature is difficult due to complexity of human behaviors and effective factors on it. With respect to educational-extension programs based on the needs of beneficiaries can be more successful (Chizari *et al*., 1999). Therefore, first stage for designing educational programs is correct implementation and based on the process of need assessment. Inattention to need assessment follows incoherence of educational content with actual needs of beneficiaries. Need assessment is a process for cognition of pervasive and perception of effective factors in learning (Robbert and Reneh, 2002). Thus, evaluation of farmers' knowledge level and educational needs, effective factors and proper educational methods are certainly necessary for the effective and applicable education of poultry farmers.

Therefore, the present study's subjects are determining: a) role of extension-educational methods and instruments on nutritional management knowledge in broiler farmers b) effective factors on the knowledge and finally, c) a proper educational plan for the farmers; as a case study in Garmsar Township.

MATERIALS AND METHODS

The methodological approach for the research was a descriptive-correlation and applied of the survey type. There were 98 farmers of broiler chicken in Garmsar Township in 2014. The instrument for data-collection was questionnaire that was designed on the basis of different sources, assumptions and study questions. Eighty-eight questionnaires were collected and analyzed of 98 broiler farmers active in Garmsar. The questionnaire was designed on the basis of five sections. First section consisted personal

Table 1: Frequency distribution of people traits in Garmsar's farmers

People traits	group (year)	Frequency
Age	<25	3
n=82	25-29	10
Minimum=23 Maximum=70	30-34	6
Mean=43 Mode=35-39	35-39	14
	40-44	8
	45-49	13
	50-54	9
	55-59	7
	60-64	2
	65-69	4
	70-74	1
Background of farm activity	No response	5
n=82	0	1
Minimum= 0 Maximum=38 Mean=15.5 Mode=11-15	1-5	11
	6-10	16
	11-15	20
	16-20	9
	21-25	5
	26-30	7
	31-35	4
	36-40	1
Farm's breeding capacity	No response	8
n=82	<10000	9
Minimum=5000 Maximum=90000	10000-19000	17
Mean=27216	20000-29000	16
Mode= 10000-19000	30000-39000	14
	40000-49000	8
	50000-59000	10
	60000-69000	1
	>70000	2
	No response	5
Educational degree	Illiterate	0
n=82 Mean=Diploma	Elementary	1
Mode= Diploma	Guidance	18
	Diploma	36
	Associate degree	12
	Bachelor of science	11
	≥ Master Science	4
Educational field	No collegiate educations	55
N=82 Mean and Mode= no collegiate educations	Collegiate educations	27
	Related educations	11
	Nonrelated educations	14
Possession type of farm	Proprietary	57
N=82 Mean= Proprietary Mode= Proprietary	Rental	22
	Partnership	3
Participation in related educational terms	No participation	33
N=82 Mean=Participation Mode=Participation	Participation:	49
	1	3
	2	6
	3	20
	4	12
	≥5	8

traits of responders. Future three sections were belonged to evaluate knowledge of nutritional management. So, knowledge of conservation and storage management of feedstuffs in store,

formulation and preparation of feed and finally feeding management in broiler farm were evaluated respectively by eight, seven and 12 statements in second, third and fourth sections, based on the Likert type scale (ranked from very low to very high). Fifth section was related to evaluate role of educational-extension methods in increasing nutritional management knowledge by responders. Extension methods and instruments considered for this study were methods and instruments of exhibition (education jointed with showing film, poster and extension exhibition), telecommunication, discussion and talking face to face, study of literatures (books and newsletter), radio and television, conferences and congresses, survey of broiler modern farms. The content and face validity of the instrument (questionnaire) was specified after several times of review and correction by the faculty members of agricultural extension and education of Islamic Azad University of Garmsar, specialists in ministry of Agricultural Jehad, MSc. and PhD graduates of agricultural extension and education, experts and local farmers in Garmsar. The reliability of analysis was calculated through guided test and cronbach Alpha coefficient was calculated α=0.86 for the whole using statistical SPSS software. The collected data were analyzed as descriptive, deductive, correlation and regression statistic by SPSS software.

RESULTS

Table 1 represents descriptive analysis for personal traits of broiler farmers. Maximum frequencies (14 and one persons) of the broiler farmers' age and farm activity cover classes of 35-39 and 11-15 years, respectively. Mean, minimum and maximum ages of farmers and farm activity are 43 and 0; 23 and 15.5; 70 and 38, respectively (Table 1).

The responders in Minimum (one person) and maximum frequencies (17 persons) promulgated that capacity of their farm are 60000-69000 and 10000-19000 chicks, respectively. The minimum, mean and maximum farm capacities are 5000, 27216, 90000 chicks respectively (Table 1).

Between the farmers' educational degrees, diploma degree has maximum frequency (36 persons; Mode). Farmers in maximum frequency (55 persons) haven't collegiate educations. Also between the farmers educated in college, 11 and 14 persons of farmers have collegiate educations related and nonrelated to their occupation, respectively (Table 1).

The least (3 persons; minimum frequency) and most farmers (57 persons; maximum frequency; Mode) were promulgated that their farm possession type are partnership and proprietary, respectively (Table 1). Rental possession constitutes 22 persons of the total frequencies (82 persons).

Between 82 farmers, 49 persons have participated in related educational terms. Also between numbers of the participated educational terms, minimum and maximum frequencies (3 and 20 persons, respectively) belong to 1 and 3 educational terms, respectively (Table 1).

Frequency distribution of farmers' knowledge about overall nutrition management ranked by Lickert type scale from very low to very high have been represented in table 2. Results indicated that farmers' knowledge about overall nutritional management of broilers is moderate (maximum frequency=58 persons). Only, six and 18 persons of farmers have promulgated that they have low and high knowledge about overall management of broiler nutrition, respectively.

Priority of farmers' knowledge about different sections of nutritional management determined by statistic of mean score has been represented in table 3. The knowledge priorities of farmers are feeding management of broilers in farm, formulation and preparation of broilers' feeds and finally, conservation and storage management of feedstuffs in store, respectively.

Table 4 represents role of extension methods and instruments in increasing nutritional management knowledge in view of farmers. Methods and instruments of exhibition (education jointed with showing film, poster and extension exhibition), telecommunication, discussion and talking face to face, study of literatures (books

Table 2: Frequency distribution of farmers knowledge about overall nutritional management (n=82)

Respondents' knowledge about following cases	Frequency				
	Very low	Low	Moderate	High	Very high
Overall management of broiler nutrition	0	6	58	18	0

Table 3: Priority of farmers' knowledge in three sections of nutritional management

Farmers' knowledge in related to following cases:	Rank mean	Standard deviation	priority
Feeding management of broilers in farm	3.735	0.846	1
Formulation and preparation of feed	3.610	1.124	2
Conservation and storage management of feedstuffs in store	3.320	1.142	3

Table 4: Role of extension methods and instruments in increasing farmers' knowledge about nutritional management (n=82)

Method or instrument	Frequency				
	Very low	Low	Moderate	High	Very high
Exhibitive methods	3	21	26	26	6
Telecommunication methods	37	16	23	5	1
Educational classes	13	14	18	22	15
Discussion and talking face to face	5	9	23	33	12
Study of scientific literatures	3	28	38	10	3
Television and Radio	22	26	18	13	3
Conferences and Congresses	23	17	25	8	9
Survey of broiler modern farms	17	8	9	18	30

and newsletter), radio and television, conferences and congresses, survey of broiler modern farms were considered as extension methods and instruments in present study. Role of exhibitive methods in increasing the knowledge by 52persons of farmers (maximum frequency; mode) was evaluated as moderate to high, each 26persons. The most farmers (37 persons; mode) promulgated that telecommunication methods have very low role in increasing of the knowledge. Only 6persons of farmers evaluated that its role is high to very high. About educational classes' method, the role was determined high by 22persons (maximum frequency; mode) of responders. It was promulgated by the maximum farmers (33persons; mode) that discussion and talking face to face method can be have high role in increasing of the knowledge. Only five persons of the farmers promulgated that it is very low. Role of study method of scientific literatures in increasing of the knowledge was evaluated moderate by 38 persons of farmers. Radio and television role by maximum farmers (26persons) was evaluated low. Maximum farmers (25 persons) promulgated that the role is moderate for conferences and congresses. Finally, role of survey of broiler modern farm in increasing of the knowledge was evaluated very high by maximum farmers (30 persons).

Correlation between the studied factors (independent variables) and nutritional management knowledge (dependent variable) of the farmers has been presented in Table 5. The correlation wasn't significant for age, educational degree, activity background, number of participated educational terms, telecommunication educational methods, educational classes, discussion and taking face to face, study of scientific literatures, television and radio and finally conferences and congresses. However, the cor-

Table 5. The correlation between independent variables and nutritional management knowledge of farmers

Independent variables	Dependent variable	r	p- value
Age	Nutritional management knowledge of broiler farmers	0.025	0.834
Educational degree		0.031	0.785
Activity background		0.197	0.099
Farm capacity		0.405**	0.000
Income level		0.289*	0.044
Number of participated educational terms		0.201	0.07
Exhibitive educational methods		0.577*	0.000
Telecommunication educational methods		0.172	0.136
Educational classes		0.073	0.531
Discussion and talking face to face		0.095	0.417
Study of literatures		0.211	0.064
Television and radio		0.003	0.978
Survey of broiler modern farms		0.297*	0.01
Conferences and congresses		0.013	0.916

* $p<0.05$ ** $p<0.01$

relation was significant ($p<0.05$) and positive for relationships of farm capacity, income level, exhibitive educational methods and survey of broiler modern farms with overall nutritional management knowledge of farmers. Correlation amounts (r) for farm capacity, income level, exhibitive educational methods and survey of broiler modern farms are 0.405, 0.289, 0.577 and 0.297, respectively.

Table 6 and 7 represent results of entering significant independent variables to stepwise regression analysis. All variables signified in correlation entered as stepwise in regression model. The independent variables reminded in equation that were significant in regression analysis. In first step on the basis of R square, 47.7 percentages (R^2=0.477) of total variance of the nutritional management knowledge was explained by exhibitive method. After entering second signified variable (survey method) in final step, R square of regression model significantly increased. Therefore, independent variables of exhibitive method and survey method could explain 56.2 percentages (0.562) of total variance of the nutritional management knowledge. However, 43.8 percentages of the variance is not explained by the factors defined in this research.

Table 6: Amounts of variance explained by the independent variables signified in stepwise regression analysis

Regression model	R	R^2	R^2 Adj	S.E
Exhibitive method (x_1)	0.691	0.477	0.466	0.403
Survey method (x_2)	0.749	0.562	0.542	0.373

Table 7: Coefficients of independent variables signified in stepwise regression analysis

Independent variables	B	Beta (β)	t	p-value
Constant	2.09	-	9.899	0.000
Exhibitive method (x_1)	0.392	0.664	2.948	0.000
Survey method (x_2)	0.138	0.292	2.948	0.000

DISCUSSION

The results related to mean age and maximum frequency of the broiler farmers' age are agreed with results of Mehrnegar and Hosseini Nia (2009) and Kazemzadeh Otufi (2001). The activity background mean of 15.5 years and existence of 46 persons of farmers in background range of >10 years can indicate the presence of skill persons in this occupation. In a study reported by Chizari (2001), mean and maximum activity backgrounds of farm's managers were promulgated 15 and more 10 years, respectively.

With respect to the results, educations level of the farmers is low (diploma) and more non-related to activity of broiler rearing that can negatively affect farmers' knowledge and skill about nutritional management in farm. In a study (Kazemzadeh Otufi, 2001) with subject of considering the effect of human factor on broiler rearing was reported that maximum frequency of broiler farmers have degree of elementary. In another study (Chizari, 2001) was reported that maximum managers of farms have ≤diploma degree.

About broiler farm's capacity can explain that production inputs are used more beneficial in big poultry farms (Chizari, 2001). However, production in the most farms is less their actual capacities.

The frequency of the farmers didn't participated in related educational terms indicate that knowledge level is low in corporations' members and also, effect of educational terms on the members is very low (Mehrnegar and Hosseini Nia, 2009).

According to our results, farmers' knowledge about overall management of broiler nutrition was moderate (maximum frequency=58 persons). Thus, these cited results indicate the necessity of attention to appropriate educational terms for increasing knowledge of nutritional management in farmers.

Need assessment is a process for cognition of pervasive and perception of effective factors in learning (Robbert and Reneh, 2002). Determination of farmers' educational needs and compilation of educational programs' content facilitate access to pleasant purposes of programmers and also prevent implementation of unnecessary programs and wastage of fund, time and executive ability of related organization. Therefore, need assessment is an important factor in an unofficial educational system. On the other hand, if content of programs be provided on the basis of beneficiaries' needs and conditions, their partnership increase in implementation of the programs (Fell, 1999 and King and Rollins, 1999).

Assessment of farmers' educational needs was done on the basis of priorities of their knowledge. Lowest knowledge priorities of farmers constitute the highest educational needs of them. Thus, educational needs of farmers are educating conservation and storage management of feedstuffs in store, formulation and preparation of broilers' feeds and finally, feeding management of broilers in farm, respectively. In each of section, education must be based on the applicable scientific literatures for increasing knowledge and skill of the farmers. Mehrnegar and Hosseini Nia (2009) after prioritizing of educational needs of corporations managers in Razavi Khorasan promulgated the proficient terms have more priority than general ones in education of managers.

Results of evaluating the role of extension methods and instruments in increasing of nutritional management knowledge by the responders indicated that the role was very low for telecommunication, low for radio and television, intermediate for conferences and congresses and study of literature, high for educational classes, intermediate to high for exhibitive educational methods, high for discussion and talk face to face, and very high for survey of broiler modern farm.

Significant relationship between the studied effective factors and nutritional management knowledge was determined by correlation method. With respect to those results, there wasn't significant correlation between age, educational degree, number of passed educational terms, and activity background with nutritional

management knowledge. These results are according to some studies (Beigi Bandar Abadi *et al.,* 2004; Kazemzadeh Otufi, 2001).Consideration of effect of different factors on production of broiler farms was indicated that activity background doesn't have any effect on mortality of broiler chickens (Beigi Bandar Abadi *et al.*, 2004). The insignificant correlation between number of participated educational terms and the knowledge can be due to deficiency of the terms or deficient participation and partnership of the responders in the terms.

However, the significant and positive correlation of farm capacity and nutritional management knowledge can explain more importance of the knowledge in decreasing production risk of big farms. So, the managers of big farms need to learn more nutritional knowledge for more precision management of farm. Also, the correlation was significant and positive for income level that indicates importance of the knowledge for obtaining more income and managing better. Between extension methods and instruments, only exhibitive educational method and survey method of broiler modern farms had significant and positive correlation with the knowledge. These correlations can be due to more efficiency of education as exhibition (education jointed with showing film, poster and extension exhibition) and survey of broiler modern farm in learning nutritional management knowledge by farmers.

According to the results of correlation, it was indicated that there isn't a correlation between number of participated educational terms and nutritional management knowledge of farmers. This result can be due to inappropriate planning of previous educational terms and programs for the farmers.

Some researchers (Palacios, 2003; Veale, 2002) believe that mystery of success of extension-educational programs is comprehensive partnership of beneficiaries in overall stages. Access to extension purposes is difficult without existence of this factor (partnership). When programs are based on the beneficiaries' needs, satisfaction will be obtained. Therefore, need assessment is an important factor in an unofficial educational system. If beneficiaries have been comprehensive partnership in extension-educational activities, the activities will be benefit in increasing of their knowledge.

According to the step-by-step regression analysis, the regression equation (0.664 (Exhibitive method) + 0.292 (Survey method)) explained most percentages of total variance of the nutritional management knowledge. The plan indicates that methods of exhibition and survey of broiler modern farms can be best extension-educational methods for learning of educational priorities by farmers and increasing nutritional management knowledge of the farmers. It has been indicated that function of education on the basis of a proper plan is significant on decreasing mortality, other losses and final price of production of broiler farms in Fars province (Shahvali and Rahimi, 2006). Assaying relation of production variables and price variance with advantage of broiler farm indicated that the management based on the knowledge is effective in increasing efficiency and advantage of farms.

With respect to the results, it is concluded and also suggested that:

Knowledge level of the farmers about nutrition management was intermediate. Therefore, more education via related organizations is necessary for increasing the knowledge of farmers and achieving to more production in broiler farms.

To persuade and more effect of education on farmers must be used proper methods and plans. Therefore, on the basis of our results, best educational plan is education of appropriate and applicable literatures with emphasis on their educational priorities (especially education of literatures related to feeding management of broilers in raising farm, formulation and preparation of broilers' feeds and finally, conservation and storage management of feedstuffs in store, respectively) via best methods especially exhibitive method and survey method of broiler modern farms.

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