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Consumer attitude towards wild-caught and farm-raised fish in Bahawalpur

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ABSTRACT

Health consciousness is becoming an imperative factor driving the intentions of people towards fish consumption due to its healthy and nutritious characteristics. So, a simulated research was designed to study consumer's attitude towards Wild-caught fish and Farm-raised fish in district Bahawalpur, Punjab province, Pakistan. By using consumer's survey data, analysis techniques were carried out to achieve attitude measurement for a set of scales. Significant percentage effects were found with age, profession and education of fish consumers. Percentage of those fish consumers found to be higher which were with age of <25 (43%), master passed (40%), students (49%). Quality, quantity and effectiveness of fish consumption were also found to cause a considerable difference across consumer's attitude. Based on type of meat, quantity and effectiveness of fish consumption, corresponding percentage of consumers was 9.5%, 30.5% (3kg per year) and 82.5%. Finally, Consumer interests in food safety and to prefer fish food seasonally have also shown significant percentage effects on consumer's attitudes towards fish consumption.

Keywords: Consumer's attitude, fish consumption, wild and farm raised fish.

INTRODUCTION

Fish consumption is rising globally due to its nutritious and healthy characteristics (Verbeke *et al*., 2007). Consumer takes into account some variables; vitamins, proteins, saturated fat and some minerals of high biological values. On the other side, consumers have also consideration of adverse side effects of fish's products on their health. Because Fish products e.g. dioxins, pesticides, polychlorinated biphenyls, organo-chlorines, some toxic substances and heavy metals are perceived as one of chief source of human exposure to food contaminants. During last two decades, farmed fishing industry is receiving great attention of consumers as a best alternative of wild fishing because natural fish stocks are depleting due to unsustainable fishing management. Aquaculture is viable alternative of traditional fishing to satisfy globally rising consumer's demand which would be increased substantially in near future (Cahu *et al.,* 2004; FAO, 2010). According to FAO 2016, production sale values of aquaculture and fisheries was estimated as USD 362 billion during the year of 2016 (FAO, 2016). Fish production from both aquaculture and wild fisheries supply consumers with a variety of fish products in retail market. Aquaculture has increased from less than 1 million tons to 66.6 million tons in 1950-2012 (Claret *et al.,* 2014; FAO, 2014).

Various factors influence consumers attitude towards fish eating such as product

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quality (Verbeke *et al*. 2007b), choice of fish meal and seafood (Brunso, 2003), food choice habits (Honkanen *et al*., 2005), benefits and risks related to health (Verbeke *et al*., 2005), convenience (Olsen *et al*., 2007; Rortveit & Olsen, 2007), age (Olsen, 2003) and health issues (Olsen, 2003; Pieniak *et al*., 2008). The intrinsic as well as extrinsic characteristics such as food products, Food intake behavior significantly influence health (Koster, 2009). Consumers exhibited positive and strong intentions to consume healthier food products (Kozup *et al*., 2003). The implicit tendency to report behavioral intentions based on past behavior and not based on deliberate descriptions of plans (Bem, 1972). If consumers completely understood food characteristics then the introduction of new food products at market places would be improved. The demand for collecting information on food composition has fully-fledged (Brunso *et al*., 2002). Marina *et al.* (2017) revealed that social and demographic features i.e. age, educational level, habitats, gender, age, education level, income, greatly influence consumer preferences towards farmed what is meant by farmed fish. So, here a simulated research was carried out to study complete consumer's attitude towards fish consumption.

MATERIALS AND METHODS

Study area

Present study was carried out in Bahawalpur, Punjab, Pakistan from February to June (Five Months). It is a 12th largest city situated in Punjab province of Pakistan. It has an estimated population of 798,509. It was once capital of former princely state of Bahawalpur. The study area is sub-tropical, with high temperature and evaporation, low relative humidity (about 60%), sporadic rainfall and strong summer winds. May and June are hottest months of the year. The soil is of alluvial type with low sand dunes and clay loam at "Dahars" (Hameed *et al.,* 2002).

Consumer's survey

In order to obtain quantitative insight into consumer's perception of wild and farmed fish, a survey was conducted in Bahawalpur during which 1000 people were interviewed from February to June, 2017 by means of questionnaires. Among these 210 successful variable entries having most desirous group of respondents (less than 25 and 25 – 35 year) were selected and analyzed for the research outcome. The random sampling in terms of desirous age group that accounts 86 and 74 %. Respondents were contacted personally at homes like common man, students, doctors. and teachers of Islamia University Bahawalpur, They were asked to complete a self-administered questionnaire Performa.

Questionnaires

A questionnaire was designed by the interviews of fish consumers in Bahawalpur that is divided into following sections;

Consumers interview profile

As recommended by Gunter and Furn-ham (1992), information relating to general demographic factors of fish consumers were recorded. In this section, consumers were interviewed about their age (<25, 25-35, 35-45, 45 or >), gender (male or female), education (Matric, Intermediate, Graduation or Masters) and profession (Students, teachers, doctors, others).

Fish knowledge

Questions relating to fish product knowledge such as fish are effective for heath or not as well as fish cause disease or not were also asked from consumers. Further information about fish consumption such as which type of meat or fish they prefer, how many times and how much kg fish, they eat per year, were also recorded.

Perception of wild caught and farm raised fish

Further consumer's attitude towards fish was analyzed in relation to which type of fish products they purchase. Analysis of consumers perception towards wild caught and farm raised fish was first started at Europe (Verbeke & Brunso, 2006) and Italy (ISMEA, 2004). Our survey explored this type of conflicting behavior. Consumers were questioned either they considered farmed fish as a best fish product or wild fish by taking into consideration nutrition, taste and hygiene. All data was collected in local language but recorded in English language.

RESULTS

During present study, different variables relating to consumers' behavior towards fish consumption was recorded (Table 1). Respondents were divided into four groups

according to their age; less than 25, 25-35, 35-45 and 45 or above. Percentage ratio of respondents was 43%, 37%, 11% and 14% for age groups of less than 25, 25-35, 35-45 and 45 or above respectively. Results were indicated that fish consumers with age group less than 25 were maximum and age group 35-45 were minimum. About 200 peoples were interviewed in which 40.5% were male and 59.5% were females. Regarding to their education matric, intermediate, graduation and masters level respondents were in 12%, 11%, 37% and 40% correspondingly. Master passed people were maximum. While relating to their profession, 49% were students, 10% were teachers, 23% were doctors and 18 were like common man. The percentage of respondent students was maximum. On basis of type of meat preferred by consumers, percentages was recorded 13.5%, 9.5%, 36% and 41% for mutton, fish, chicken and beef consumers. Beef consumers were maximum and fish consumers were minimum. To fish consumers a question was asked, either they eat fish for ever or not? About 76% consumers respond yes while 24% in no. About 23.5, 24.5, 16.5 and 35.5 percentage was recorded for fish consumers that eat fish 3 times, 5 times, 10 times and more than 10 times per year respectively. Maximum consumers were those who eat fish more than 10 times/year. On basis of how much Kg per year fish they eat, 30.5, 25, 20 and 24.5 percentage was recorded for those consumers that eat fish 3kg, 5kg, 10kg and above 10kg per year respectively. River fish consumers were recorded 59.5% and farm fish consumers were in 40.5%. About 85% consumers showed fish eating preference in winter and 15% in summer. About 20% respondents were assured that fish caused disease but 80% were not sure. In response to a question, either fish meat is effective for health or not, 82.5% fish consumers respond in yes and 17.55% were respond in no.

Table. I: Percentage proportion of various variables related to fish consumption derived by interviews of respondents in district Bahawalpur, Punjab, Pakistan.

Determinants	Variables	Respondents	Percentage
Age of consumers	Less than 25	86	43
	25-35	74	37
	35-45	22	11
	Above 45	28	14
Gender	Male	81	40.5
	Female	119	59.5
Education	Matric	24	12
	Intermediate	22	11
	Graduation	74	37
	Master	80	40
Profession	Student	98	49
	Teacher	20	10
	Doctor	46	23
	Other	36	18
Type of meat	Mutton	27	13.5
Preference	Fish	19	9.5
	Chicken	72	36
	Beef	82	41
Type of fish	Wild fish	119	59.5
	River fish	81	40.5
Eat fish ever?	Yes	152	76
	No	48	24
Fish per year	Three times	47	23.5
	Five times	49	24.5
	Ten times	33	16.5
	Above 10 times	71	35.5
Kg Fish per year	3 Kg	61	30.5

	5 Kg	50	25
	10 Kg	40	20
	Above 10 Kg	49	24.5
Season preference	Summer	30	15
To eat fish	Winter	170	85
Fish causes disease	Yes	40	20
	No	160	80
Fish is effective?	Yes	165	82.5
	No	35	17.5

DISCUSSION

In recent trends foods are not intended to only satisfy hunger and to provide necessary nutrients but also to prevent nutrition-related diseases and improve physical and mental well-being of consumers. Remarkable point of present study is that here a full investigative research has been carried out first time on consumers attitude toward fish consumption in Bahawalpur. Respondents were categories in four groups according to their age; less than 25, 25-35, 35-45 and 45 or above. Age group less than 25 were showing maximum fish consumption frequency while, Verbeke *et al.,* 2007 use atleast one latest reference evaluated that people from Belgium, Norway and Spain range in age from 20-60 years were found to be having high wild and farmed fish consumption frequency. These studies indicate that modern consumers are well aware of the healthy characteristics of eating fish (Smith *et al.,* 2000; Barberger-Gateau *et al.,* 2005; Augood *et al.,* 2008; He, 2009).

In respondents, 40.5% were male and 59.5% were females. Proportion of female consumers was found to be higher than male consumers. Similarly in Nyanza region, frequency of female consumers (52%) was more than male consumers (48%) (Alba & Hutchinson, 2000; Moore & Lehmann, 1980). Further Drichoutis *et al.* (2006) described that female consumers have more knowledge of fish consumption because of their higher cooking involvement. Claret *et al.* (2014) also evaluated that females use more aquaculture products than males. Fishing show divergences from animal slaughtering and hunting in sense of gender because chiefly men function as abattoir workers and hunters (Herzog, 2007). But gender differences in Finland in recreational fishing are not pronounced; 44% Finland men and 24% Finland women are recreational fishers (Fgfri, 2009).

Regarding to their education in present study, the ratio of matric, intermediate, graduate and masters level respondents were in 12%, 11%, 37% and 40% correspondingly. Master passed people were maximum. Our survey achieved a good representation of State's population in terms of age groups, education and income levels. Fish consumption was significantly related with household size, income, education and religion. Education is assumed to enlighten consumers about health and other benefits of fish consumption hence, positively influence general preference of consumers.

Mostly people (80%) responded that fish does not cause disease while 20% responded that fish caused disease. About 82.5% interviewers reported that fish is effective against diseases while 17.55% responded not. These findings showed significant differences with belief that eating fish is imperative for health, with objective and subjective knowledge of fish. Despite this, a healthy image of fish predominantly emerged, which is showing consistency with prior knowledge constructed on other cross sectional data of consumers (Verbeke & Vackier, 2004). Olsen, (2003) reported a strong interactions between fish eating and consumptions behavior. Eating fish is imperative for health (Olsen, 2003), just saying that is not sufficient to convince people to eat more and more fish.

Consumer's meat preference was also recorded that found to be 13.5 % mutton, 9.5 % fish, 36 % chicken and 41 % beef. Accordingly, attitudes towards fish consumption were lowest in Belgium, higher in Norway and highest in Spain (Verbeke *et al.,* 2007). Both high health involvement and more positive attitudes towards fish consumption were suggested to positively associate with total fish consumption. Pieniak *et al.,* (2008) showed that involvement in health affects interest in healthy eating, which influences total fish consumption. Combining present findings with previous two by Olsen,

(2003) and Pieniak *et al*., (2008), it was concluded that health involvement is associated with age. The study explored health involvement and attitudes towards fish consumption are associated with consumption of both farmed and wild fish.

During present study wild fish consumers were recorded 59.5 % and farm fish consumers were 40.5%. Verbeke & Brunso, (2006) evaluated that Dutch, Belgian and Polish consumers considered farmed fish as being safer than wild fish. While Davidson *et al.* (2012) evaluated that Hawaiian consumers preferred wild fish on farmed fish. The multi factorial character about food safety have highlighted differences observed between wild and farmed fish in sense of marine pollution, parasites, antibiotics, heavy metals, healthy animal feeding and healthiness (Henson & Traill, 1993; Wilcock, *et al.,* 2004). Most consumers not considered differences between two kinds of fish and have preferred aquaculture fish in a blind test (Cahu *et al*., 2004; Luten *et al.,* 2002). Luten *et al*. (2002) and Cahu *et al*. (2004) evaluated that there is not a substantial differences between farmed and wild fish in their sensory analyses. Based on total survey sample, about 20 % of the respondents were agreed with the belief that farmed fish are less nutritious than wild fish. Cahu *et al*. (2004) reported that nutritional contents of both wild and farmed fish have potential to prevent cardiovascular diseases furthermore, protein and cholesterol levels are similar in these both forms. As a result, scientific grounds for substantiating consumers' perception of wild fish being more nutritious than farmed fish are practically non-existent.

About 23.5, 24.5, 16.5 and 35.5 percentage ratio was recorded for fish consumers that eat fish 3 times, 5 times, 10 times and above 10 times per year respectively. More than 10 time fish eaten per year by respondents indicated that people preferred fish. Portuguese participants of about 70%, Italian and Greek participants of about 40%, were claimed to eat fish more than one time in a week followed by those from Czech Republic, UK, Romania, Sweden and Germany (Cardoso *et al.,* 2013). These ranks matched closely with consumption data of FAO in which Portugal was considered a country with highest fish consumption in Europe. While Czech Republic, Romania and Germany are among European countries with lowest fish consumption levels (FAO, 2008). On basis of how much Kg per year fish they eat, 30.5, 25, 20 and 24.5 percentage ratio was recorded for those consumers that eat fish 3kg, 5kg, 10kg and above 10kg per year respectively. It indicates that majority (30.5%) of people eat fish 3 kg per year. Fish consumption in Belgium represented only 10% of total amount (kg/capita/year) consumed in Spain (European Commission, 2012). There is clear evidence that fish and seafood are widely perceived as healthy foods with a number of specific health and nutritional benefits mainly associated with high content in proteins and` Omega-3 fatty acids together with a low fat content.

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