

Chilean consumers' perception about animal welfare in dairy production systems: short communication

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Abstract. Information on animal welfare and ways that farm animals are kept has gained more and more importance with regard to the consumers' behaviour and expectations when buying food products. In certain countries, animal welfare is considered as an important extrinsic quality attribute of animal products. Until now, hardly any studies have been conducted in Latin America on consumers' expectations and knowledge regarding animal welfare aspects of the products they buy. The objective of this study was to determine the knowledge and expectations of consumers in Chile regarding information about dairy production systems and animal welfare, and the main aspects they considered when buying dairy products. A face-to-face interview was conducted on a sample of 501 persons from the Province of Santiago, Chile. The survey was conducted in major supermarkets from 15 different municipalities of Santiago in November and December 2012. The main aspects considered before purchasing dairy products were fat content (30%) and price (26%). It was shown that 66.9% of the participants associated the term animal welfare with responsible pet ownership, 12.4% to farm animal care, 11.6% to vegetarianism and 9.2% to the freedom and nature of animals. Age, educational level and family income were related ($P < 0.001$) to responsible pet ownership whereas gender did not relate to the concept of animal welfare. From the total surveyed participants, 73% were interested in receiving more information about animal welfare; 62% of these were women between 18 and 30 years of age. Information about the conditions of milk production and animal welfare were considered to be an important aspect to be included in dairy products' labelling for 86% of the participants. Also, 68% of the participants declared a willingness to pay more for an animal welfare friendly dairy product. Data from this study may be useful in order to include animal welfare as an extrinsic quality attribute of dairy products in Chile and to define a market-oriented strategy including animal welfare.

Additional keywords: animal production, consumer, dairy products.

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Introduction

In recent years, animal welfare has become an important part of the animal production science that has evolved along with the modernisation of food animal husbandry systems (Guatteo *et al.* 2012). In the European Union and North America the animal rights movements have developed rapidly, as a consequence, a strong social claim in favour of animal welfare has produced important changes in the European legislation controlling livestock industries (María 2006). For the past 20 years, consumers from developed countries are more and more concerned about animal welfare and the husbandry systems, and in many cases consumers recognise animal welfare as a quality assurance of food of animal origin (Santurtun Oliveros *et al.* 2012). In general, regarding food products, purchase decision of consumers is based on different product attributes

(Engel *et al.* 1995). Those characteristics are divided in intrinsic (i.e. flavour, odour and colour) and extrinsic (i.e. price and country of origin) attributes (Steenkamp 1989). However, depending on the countries, consumers can be more concerned about ethical aspects of food production rather than by its cost or intrinsic factors (Harper and Henson 2001). This has an important effect on how farmers should finally produce their products (for example, milk, meat, eggs), and how government, retailers, industry and farmers should potentially communicate on animal welfare.

Until now Latin American consumers' attitudes towards animal welfare have not been well studied (Santurtun Oliveros *et al.* 2012) and most of the literature on consumer attitudes towards animal welfare originates from Europe, the United States and Canada (Fraser 2008). Köbrich *et al.* (2001) reported from a survey conducted on high-income consumers in Santiago, Chile,

that roughly 80% expressed a positive attitude towards animal welfare and 75% declared to be willing to pay an extra price for welfare friendly products. However, no information is available on what consumers consider when talking about animal welfare and what are their expectations regarding product information. Therefore, the objective of this study was to determine the knowledge and expectations of consumers in the Province of Santiago, Metropolitan Region, Chile, regarding information about dairy production systems and animal welfare, and the main aspects they considered when buying dairy products.

Materials and methods

Participants and locations

Before using the final questionnaire, a pilot survey was performed on 15 persons at the Campus San Joaquín of the Pontificia Universidad Católica de Chile. A face-to-face interview was conducted randomly on 501 persons from the Province of Santiago, Metropolitan Region, Chile. The survey was conducted by the same person at the entrance of major supermarkets from 15 different municipalities (population ranges from 74 000 to 250 000 inhabitants) of the Province of Santiago (~2 000 000 inhabitants; Adimark 2004) between 30 November and 20 December 2012. Surveys (~28 per day) were carried out from 1100 hours to 1330 hours and from 1430 hours to 1700 hours (Monday–Saturday).

Questionnaires

Eleven questions regarding animal welfare were formulated and presented to the consumers (Table 1). These questions were part of a bigger questionnaire and study regarding purchase behaviour of animal products. Questions with either open-ended or pre-fixed answers were presented. Next to the questions related to product information and animal welfare, the following socio-demographic information about the persons interviewed was recorded: age, gender, educational level, family income per month and whether job occupation was related or close to agriculture (Table 2).

Statistics

Sample size was calculated by stratified sampling with dichotomous variable. Confidence (95%) and estimation error (1%) with p (0.5) and q (0.5) were calculated. Surveys were subjected to an exploratory descriptive analysis of categorical variables. Initial statistical test on the data was performed by two-dimensional contingency tables from which percentages, frequencies and distributions were obtained from each question. Statistical frequency was analysed using the Chi-squared test. The SPSS statistical package was used. Significance was declared at $P < 0.05$.

Results

Table 2 presents a description of the sample of consumers surveyed. Of the respondents, 54.9% were women. More than 80% of the respondents were between 18 and 50 years old, with 36.9% between 18 and 30 years. The educational level of the respondents was relatively high as 31.9% had a university level and 30.9% a technical level (BSc. degree). Only 9.2% had an occupation related to agriculture.

Consumption and purchase behaviour

From the total participants surveyed, 51.5% consumed at least one dairy product daily, 26.3% three times per week and 10.8% once per week or less. Consumption frequency of dairy products was different ($P < 0.001$) regarding educational level, being higher in those persons with a BSc. (15% of total responses) and university (18% of total responses) studies. More than half (61%) of the participants declared to read the label of the dairy products before purchasing, and educational level was associated ($P < 0.001$) with label reading. The main aspects considered before purchasing dairy products were fat content (30%) and price (26%), the other aspects being considered less important (brand: 20%; flavour: 18%; packaging: 3%; other: 2%). Respondents with university studies (39%) cared on average more about the fat content of dairy products than the other categories of education level ($P < 0.001$). Women with university studies considered fat content as the most

Table 1. Questions and choices for participants

Question	Choice
(1) How often do you consume dairy products?	Daily/three times per week/once per week or less
(2) When you buy dairy products, which information is more important for you?	Price/brand/packaging/fat content/flavour/other
(3) Do you read dairy products labelling?	Yes/no
(4) What is the meaning of animal welfare to you?	Free choice answer
(5) Would you like to know more about animal welfare?	Yes/no
(6) What is the best way to keep cows on a farm?	Inside/outside grazing/a mixture of both
(7) Do you associate welfare to milking process?	Yes/no
(8) Is animal welfare relevant in dairy products labelling?	Yes/no/do not know
(9) Does animal welfare improve the dairy product quality?	Yes/no/do not know
(10) Will you pay more for dairy products that certify animal welfare?	Yes/no/do not know
(11) How much more will you pay for that product?	50–40%/30–20%/10–5%/0%
(12) Which of the following conditions do you associate to animal welfare?	Cattle-pen cleanliness/proper handling to dairy cows/feeding practices/slaughter conditions/transport conditions/farm facilities
(13) Do you associate welfare to dairy product quality (i.e. nutritive value, flavour and brand)?	Animal welfare improves dairy product quality/animal welfare does not improve dairy product quality/no effect

Table 2. Percentage description of the sample of dairy product consumers in supermarkets in the Province of Santiago, Chile, May 2012

Sample	Total	Total sample (n = 501)
<i>Gender</i>		
Women	275	54.9
Men	226	45.1
<i>Age</i>		
18–30 years	185	36.9
31–40 years	109	21.8
41–50 years	113	22.6
51–60 years	47	9.4
>65 years	47	9.4
<i>Educational level</i>		
Primary school	22	4.4
High school	147	29.3
Technical	155	30.9
University	160	31.9
Postgraduate studies	10	2
Other	7	1.4
<i>Family income per month</i>		
US\$3200–6600	78	15.6
US\$1100–2100	187	37.3
US\$700–900	184	36.7
US\$350–550	46	9.2
<US\$300	6	1.2
Occupation related to agriculture or agronomy	46	9.2
Profession not related to agriculture nor agronomy	455	90.8

important ($P < 0.001$) information from the label whereas men cared more ($P < 0.001$) about the price.

Animal welfare knowledge and perception

From the open-ended question ‘What does animal welfare mean to you?’, 67% of the participants associated animal welfare to responsible (pet) ownership, 12% to farm animal care, 12% to vegetarianism practices and 9% to the freedom and nature of animals. All levels of age, educational level and family income were related ($P < 0.001$) to responsible (pet) ownership whereas gender did not relate to the concept of animal welfare.

Regarding the way cows should be best kept on a farm, most of the respondents (62%) believed that a mixture of inside housing and grazing is the best way to keep cows in a production system. Of those persons that preferred a mixed system 57% were women and 43% were men. However, of the respondents that preferred inside housing of cows 80% were men and 20% were women.

More than half (64%) of the people surveyed associated animal welfare to the milking process (the way cows are milked). From those persons, 45% believe that the milking process affects the welfare of cows. The higher the educational level, the more respondents believed that the milking process benefits the animal. In general, 97% of the participants related animal welfare to one or more of the following aspects: cleanliness of housing facilities, feeding practices, and transport conditions among others (Table 3).

From the total surveyed participants, 73% were interested ($P < 0.001$) in receiving more information on animal welfare. Of

Table 3. Association of animal welfare to farm production systems

	Total	Total sample (n = 501)
Animal welfare associated with:		
Cattle-pen cleanliness	440	87.8
Proper handling to dairy cows	437	87.2
Feeding practices	434	86.6
Slaughter conditions	382	76.3
Transport conditions	367	73.3
Farm facilities	324	64.7
Animal welfare associated with product quality:		
Do not improve dairy product quality	171	34.1
Improves dairy product quality	176	35.1
Neutral ^A	154	30.8

^AParticipants who believe that animal welfare partially improves the quality of dairy products.

these 62% were women between 18 and 30 years of age ($P < 0.001$). Thirty-five per cent of the participants said that animal welfare improves the quality of dairy products (Table 3), and of these, 41% were women ($P < 0.001$) between 31 to 40 and 41 to 50 years of age ($P < 0.001$).

Regarding the question, ‘Do you associate welfare to dairy product quality (i.e. nutritive value, flavour and brand)?’ from the total surveyed persons, 28% were between 18 and 30 years old and believed that animal welfare does not improve dairy product quality (Table 3). Also, most respondents with primary school and university studies did not believe that animal welfare improves product quality.

Sixty-eight per cent of the respondents declared themselves willing to pay more for a dairy product that certifies animal welfare. Thirty-six per cent of the respondents declared themselves willing to pay between 20% and 30% more for a litre of milk that certifies the welfare of the animals. The persons aged between 18 and 30 years old were the group with more disposition to pay for an animal welfare friendly product ($P < 0.001$). The willingness to pay more was observed to be reduced as the respondents got older ($P < 0.001$).

Discussion

This survey performed on citizens of the Santiago de Chile area illustrated an interest for more information on animal welfare and production practices. However, aspects such as age and educational level influenced results.

According to 62% of the participants, a mixture of inside housing and grazing is the best way to keep cows in a production system such as can be found in Chile. Furthermore, in general, participants related animal welfare mostly to cleanliness of housing facilities, feeding practices, and transport conditions. These results are somehow similar to studies performed in Europe. For example, in the Netherlands, animal-product consumers relate animal welfare to the health of animals and the environment in which they live. Dutch people also think that animal welfare is optimal when an animal is having enough space, outdoor facilities, proper feed, and the option to express natural behaviour (Roex and Miele 2005). In a study performed in Latin-America, Mexico City animal-product consumers have

positive attitudes towards livestock welfare. However, their main concern is on animal transport. Differences in associations between animal welfare and production practices might be explained by the fact that transport is one of the few activities of animal production that can be seen by consumers living in urban areas (Santurtun Oliveros *et al.* 2012). Furthermore, the fact that the current study and the Mexican study were performed on citizens from large urban areas might also influence results as they probably have less direct contact with agriculture (Millman 2009).

Almost three-quarters of the respondents were interested in receiving more information on animal welfare. Age and gender influenced the results in this study. Women had different expectations regarding animal welfare (expected more grazing as positive for dairy cattle welfare) and wanted more information about animal welfare than men. Several authors found similar results (Herzog *et al.* 1991; María 2006; Vanhonacker *et al.* 2009; Miranda-de la Lama *et al.* 2013), potentially explained by more moral and ecological concerns in women regarding animal welfare and treatment of animals (Beardsworth *et al.* 2002). The gender effect in our study was somewhat confounded with age as the women were between 18 and 30 years of age. However, the young people in our study did globally not make the link between animal welfare and product quality and declared to be willing to pay more for animal welfare. Overall, these results confirm studies reporting younger respondents to have more pro-animal welfare attitudes (Vanhonacker *et al.* 2007).

Education level also influenced the results of our study. Compared with other education level classes, respondents with university level studies declared more label reading, had beliefs about links between the production process and animal welfare, but made less links between welfare and product quality. Although our results are not that clear cut regarding the exact expectations of the higher education level respondents, the overall impression given is that these people express higher concerns for animal welfare as found by other authors (Vanhonacker *et al.* 2007). Also, Harvey and Hubbard (2013) reported that as societies become wealthier, educated and more able and willing to take care of their environments and activities, they will tend to be more willing to pay for improved animal welfare (Keeling *et al.* 2012), as well as promote stricter legal requirements. However, the results of our study are too limited to confirm these conclusions.

The information about animal welfare production conditions was considered to be a relevant aspect to be included in dairy product labels for 86% of the participants. Also, 36% of the participants declare a willingness to pay between 20% and 30% more for a welfare friendly dairy product. The average willingness to pay was 20–30% more for a litre of milk that certifies the welfare of the animals, which is high compared with other Latin-America studies. For example in a study carried out by Schnettler *et al.* (2008) in southern Chile, the willingness to pay a higher price for ruminant meat produced according to animal welfare standards was ~15% over the normal price. There are reports (Cicia and Colantuoni 2010; Lagerkvist and Hess 2011) estimating the willingness to pay for animal welfare and other attributes of animal products. However, it is generally recognised that there are differences in intentions to consume products and actual purchasing behaviour (Bennett *et al.* 2002;

Verbeke 2009). Furthermore, between studies, product and population characteristics make it difficult to draw straight forward conclusions on the exact percentages and purchase intentions.

Conclusions

Socio-economical differences between participants in terms of age, education, and gender affect their perception of animal welfare in dairy production systems and in consequence may also affect consumption behaviour. Data from this survey may be useful to the different stakeholders (farmers and dairy companies) of the dairy production chain in how to deal with animal welfare as an extrinsic quality attribute of dairy products in Chile.

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