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Research Article
Analysis of Factors Affecting Consumer Behavior of Dairy Products in Algeria: A Case Study from the Region of Guelma

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Abstract

Background and Objective: Examination of the relation between dairy products consumption and consumer behavior is important, due to the importance of these products for health and also for economy. The objective of the study was to analyze the consumer behavior in regard to milk and dairy products and possibly identify effects of different variables on consumer decision upon purchase of milk and milk products. **Methodology:** A total of 326 random households located in urban, semi-urban and rural areas were selected. A survey protocol was used to collect data on milk consumption (perception before purchase and real consumption) using questionnaires. In this study, consumer's dairy products behavior consumption in the region of Guelma (Algeria) was studied, using different socio-economic variables assessed by so-called evaluation criteria 1-5. Contingency analysis were used to analyze indicator's perception of consumers about milk and milk products using classification criteria's. Factors determining the yearly quantitative consumption were analyzed, using a covariance analysis. **Results:** For perception analysis, the most important socio-economic variables explaining individual differences in consumer behaviors were: Taste trust, health benefits, packaging, type of shop, brand, the origin of product and publicity. For consumption analysis, results revealed highly variable levels of milk and dairy products consumption: (1) Average consumption of milk equivalents was reached 162±113 kg (101 kg of drinking milk, 16.87 of yogurt, 21 of butter and 21.81 of the remaining products), (2) Consumption of pasteurized milk was 65.03 kg person^{-1} year^{-1}, (3) Raw milk consumption was significantly higher in the rural than in the urban areas ($p<0.05$) and (4) Consumption of pasteurized packaged milk and Ultra High Temperature (UHT) milk was significantly higher in urban areas ($p<0.05$). Moreover, a covariance analysis allowed the identification of 4 major factors in the variation of dairy products consumption: The geographic area (43.98%), the number of children per household (20.80%), the income level (20.76%) and the price (9.17%). **Conclusion:** It is concluded that assessment of consumer behavior can contribute to a better understanding consumption behavior, which can be used as a useful indicator of market orientation, in the aim to increase dairy products consumption.

Key words: Milk and dairy products, purchasing patterns, attitudes, preferences, perceptions, consumer survey, influencing factors

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Competing Interest: The authors have declared that no competing interest exists.

Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Inspite of the considerable livestock potential in Algeria, the country still faces a huge deficit in dairy production. This problem imposes each year a huge spending from the import invoices, reaching 2.045 billion US$ for milk in 2011[1]. Furthermore, Algeria is one of the largest powdered milk importers in the world, relying heavily on imported powdered milk[2]. The consumption of milk and its derivatives strongly increased in the country, rising from 34 L year^{-1} person^{-1} in the early 1970s to 121 L in 2006[3]. Milk powder accounts for 51.5 kg per capita, followed by drink milk (37.0 kg), fermented milk (8.7 kg), cheese (1.6 kg) and yogurt (1.2 kg)[4].

In Algerian diet, dairy products are staples food supplying 60% of the animal proteins, which are very important for bone development and calcium intake[5,6]. However, milk and milk products consumption remain very low, compared to those of European and North American Countries[7] and do not reach the World Health Organization recommendations[8].

Consumer behavior is a complex task, strongly influenced by psychological, social, economic and cultural factors[9,10]. Several studies show the existence of significant differences ($p<0.05$) between consumer behaviors (quantitative and qualitative consumption) in different countries (Vietnam and Indonesia)[11-13]. These differences result from personal, environment interaction and they are mainly related to socioeconomic and demographic variables (price, number and presence of young children, income level, education level, gender and age)[11-13]. From there, understanding the requirements of different segments of the population helps dairy units and their marketers to identify the different sets of consumers and their consumption preferences[11].

In Algeria, food behavior concerning milk and dairy products has been poorly investigated. The main objectives of this study were to:

- Analyze consumer's behavior perception (purchasing probability) to milk and dairy products
- Analyze consumer's behavior consumption to milk and dairy products
- Examine the factors influencing perception and consumption of households, in urban, semi-urban and rural communities in Guelma (province located in Northern-East of Algeria)

MATERIALS AND METHODS

Participants and data collection: The study was carried out in Guelma province (36°46' N, 7°28' E) represented by Guelma city for the urban area, Oued Zenati for the semi-urban area, Bordj Sabath, Ain Ben Baida and Hammam n'Bails for the rural area.

The survey was carried out by trained interviewers among 326 respondents (Each respondent represents a household, this person has holds power to make decision of milk consumption) from different regions and socio-economic groups (Table 1). Study was conducted during period June-November, 2015. All consumers buying dairy products during period of survey without any pre-selection criteria were part of study.

The characteristics of all participants (sex of consumer, age of consumer, education level, monthly income, employment status, place of residence and family size) are reported on questionnaire.

Reasons for drop out were: Uncompleted records or did not return the questionnaire.

Ethics statement: The study was approved by the local ethics committee.

Experimental design: During study period, information from interviews were collected and inserted directly in questionnaires which contain qualitative and quantitative questions (what consumer were buying milk and milk products, consumer perception related to milk and milk products).

In the first time and to study milk and milk products choice parameters upon supply (Consumers perception or purchasing probability), a coding approach from 1-5 was used (1 = Very highly important, 2 = Highly important, 3 = Average, 4 = Less important, 5 = Not important) according to Hysen *et al.*[14] protocol.

Consumers perception related to milk and milk products was assessed using different variables: Heath

Table 1: Household characteristics respondents which participating in the survey

		Representative provinces		
Type of household	Total*	Urban area	Semi-urban	Rural area
High income level	104	37	35	32
Medium income level	110	33	40	37
Low income level	112	35	38	39
Total	326	105	113	108

*Sum of households

benefits, taste, trust, package, publicity, product origin, traceability, shop type, brand and the use of fresh milk.

Third, milk and milk products consumption was assessed by measuring yearly consumed quantities.

Statistical analysis: Consumption values (continuous variables) are Mean±SD, whereas categorical variables were described as frequencies and percentages.

For perception analysis (purchasing probability), contingency and chi-squared analysis were used to analyze indicator's perception and relation between different groups of consumers about milk and milk products using criteria of importance 1-5.

For consumption analysis, variances analyze (one-way ANOVA) followed by Least Significant Difference (LSD test) was performed according to Gomez and Gomez[15] to analyze "geographic localization effect" on milk consumption, for different drinking milk (Raw, UHT, pasteurized and traditional fermented milk).

Also, for consumption analysis and before statistical analysis, quantitative results from milk consumption (farmer milk, powder milk, pasteurized milk, UHT, condensed milk, traditional fermented milk, curd milk "Rayeb") and milk products (Yogurts, cheese, butter, dairy desserts, fruity milk and fresh cream) have been converted in kilogram of milk equivalent to standardize the unit of measurement according to Meyer and Duteurtre[16] protocol to better understand the structure of milk products consumption:

$$\text{Milk equivalent (kg)} = \left(\begin{matrix}\text{Daily consumption for each kind of product (kg)}\times \\ \text{Conversion coefficient}\end{matrix}\right)$$

Conversion coefficient values:

- 1 for drinking milk, raw milk, fermented milk, yogurt, fruity milk and dairy desserts
- 2 for condensed milk and fresh cheeses
- 4.4 for dry cheeses
- 6.6 for solid butter
- 7.6 for milk powders

After conversion to kilogram of milk equivalent, analysis of covariance (ANCOVA) was used to test factors that influence milk and milk products yearly consumption in kilogram milk equivalent per person.

The ANCOVA provides analysis of variance for one dependent variable through combinations of categorical and continuous predictor variables using the following model:

$$Yi = \beta0+\beta1\ Xi1+\beta2\ Xi2+...+\beta7\ Xi7+\varepsilon i$$

where, β1... β7 are regression coefficient, explanatory variables assumed to have effects on milk consumption of households are discussed in Table 2.

All statistical analysis were performed using SPSS software [Sage Publication, Ltd, United Kingdom (Version 10)] and $p<0.05$ indicated statistical significance.

RESULTS AND DISCUSSION

The present study pointed out the sensitivity of consumers basic criteria i.e., taste trust and health benefits with a significant influence ($p>0.05$) on consumer's perception at purchasing these products. Milk consumption in Guelma province was affected by geographical location, the number of children per household, price and monthly income.

Perceptions of consumers regarding milk and milk products: Respondents were asked to rate several attributes from very highly important (1) To not important (5) When purchasing milk and milk products.

Taste and trust showed the highest number of response 32 and 30% respectively, with "Very highly important" codes.

Table 2: Definition of the variables used in empirical

Symbol used	Corresponding variable	Remarks
Y_i	Consumption of milk and dairy products	Dependent variable (Kilogram milk equivalent per year per person)
β0	Intercept item	
Xi1	Geographical location	if urban = 1, if semi-urban = 2 and if rural = 3
Xi1	Household monthly income	If easy = 1, if medium = 2 and if low = 3
Xi2	Gender of the respondent	If male = 1, if otherwise = 0
Xi3	Number of children per household	Continuous variable (person)
Xi4	Number of elders more than 70 year old per household	Continuous variable (person)
Xi5	Education level of person who holds power to make decision	If illiterate = 1, if higher = 2, if secondary = 3 and if primary = 4
Xi6	Price_percep (milk and milk products)	Dummy (= 1) if person who holds power to make decision of milk purchasing considers price as the most important criteria and (= 0), otherwise.
Xi7	Age person who holds power to make decision of milk consumption	Continuous variable (year)
εi	Random error term	

Health benefits, packaging and origin of product receiving the code "Very highly important" responses, with 14, 9 and 6, respectively. Only 4% of consumers rated publicity as "Very highly important".

Table 3 shows a significant effect of socio-economic variables, on taste and trust of products ($p<0.0001$) of milk and milk products perception (purchasing probability). At this level, the people responsible for the purchase or preparation thinks only satisfy the taste of different household members, particularly the children. "Taste" is more important than "Nutritional quality" in the products choice. This study shows the importance of consumer confidence in the merchant when buying high-quality dairy products, without relying on the brand, expiry date or advertising. The merchant and the consumer are well acquainted with each other regularly, which generate a confidence in the market.

This was consistent with the findings reported by Hysen *et al.*[14] which demonstrated that the most important socio-economic factors influencing purchase of dairy product are trust, gender, quality and origin of product[14].

Moreover, other variables like product origin and type of shop, brand, health benefits, packaging and publicity affect perception of consumer behavior in significant manner (Table 3). No significant effects were registered from traceability and the use of fresh milk on perception of consumer behavior (Table 3).

Detailed analysis concerning consumer's perceptions of milk and milk products, which use values 1 to 5 are presented in Table 4 (only three variables: Taste, traceability and publicity are presented).

Most of consumers considered "Taste" a very highly important factor and put it at consumer perception criteria 1 and 2 (60.24%), showing high effect of "Taste" on consumers decision for purchase of dairy food (Table 4).

Table 3: Significant level of different variables on perception of consumers related to milk products consumption

Indicator	Prob>F
Taste	<0.00001
Trust	<0.0001
Traceability	>0.731
Health benefits	<0.006
Packaging	<0.017
Type of shop	<0.014
Brand	<0.0001
Origin of product	<0.037
Using of fresh milk	>0.397
Publicity	<0.011

NS: No significance for level $p>0.05$

Table 4: Effect of different variables on purchasing of dairy products

Milk products	Consumer perception criteria*										Total	
DP	N	1 (%)	N	2 (%)	N	3 (%)	N	4 (%)	N	5 (%)	N**	N (%)
Taste												
F. Milk	111	82.22	15	11.11	8	5.92	1	0.74	0	0	135	100
P. Milk	20	12.5	14	8.75	45	28.12	74	46.25	7	4.37	160	100
Past. Milk	54	21.6	141	56.4	43	17.2	10	4	2	0.8	250	100
UHT	32	23.18	41	29.71	44	31.88	11	7.97	10	7.24	138	100
Yogurt	132	51.60	76	29.57	34	13.23	6	2.33	9	3.50	257	100
Cheese	41	19.71	44	21.15	54	26.34	34	16.34	35	16.82	208	100
Butter	21	15	34	24.28	65	46.42	15	10.71	5	3.57	140	100
Total	411	31.91	365	28.33	293	22.74	151	11.72	68	5.28	1288	100
Traceability												
F. Milk	0	0	0	0	0	0	0	0	135	100	135	100
P. Milk	0	0	0	0	0	0	0	0	160	100	160	100
Past. Milk	0	0	0	0	0	0	0	0	250	100	250	100
UHT	0	0	0	0	0	0	0	0	138	100	138	100
Yogurt	0	0	0	0	0	0	0	0	257	100	257	100
Cheese	0	0	0	0	0	0	0	0	208	100	208	100
Butter	0	0	0	0	0	0	0	0	140	100	140	100
Total	0	0	0	0	0	0	0	0	1288	100	1288	100
Publicity												
F. Milk	0	0	0	0	0	0	0	0	135	100	135	100
P. Milk	5	3.12	10	6.25	25	15.62	43	26.87	77	48.12	160	100
Past. Milk	0	0	4	1.6	35	14	98	39.2	113	45.2	250	100
UHT	13	9.42	7	5.07	30	21.73	54	39.13	34	24.63	138	100
Yogurt	23	8.94	22	8.56	111	43.19	65	25.29	36	14	257	100
Cheese	11	5.28	17	8.17	104	50	54	25.96	22	10.57	208	100
Butter	0	0	14	10	32	22.85	36	25.71	58	41.42	140	100
Total	52	4	74	5.74	337	26.16	350	27.17	475	36.87	1288	100

*Consumer perception criteria expressed using values 1 at 5, **No. of answers for each product deriving from 326 interviews, DP: Dairy products, F: Farmer, P: Powder, Past: Pasteurized, UHT: Ultra-high temperature

This is consistent with a previous report, showing that taste is one of major determinants of food choice[17]. Bus and Worsley[18] demonstrated that more than 73% of consumers had positive attitudes towards the taste of milk. This attribute "Taste" was affected by milk composition; Chung[17], reported that milk fat content, was correlated with milk preference.

The second attribute recorded was "Traceability", which means the ability to track any food, food-producing animal or substance that will be used for consumption, through all stages of production, processing and distribution. Despite "Traceability" importance[19], results from Table 4 have shown that this variable is the lowest important factor.

Moreover, quality is not perceived through the traceability of dairy products. Traceability may be unknown for the panel list recruited for this study.

For packaging type, results from this study showed that the consumers is considering this variable as "Very highly important", comparing to the consumers ranking "Not important". As for the packaging of milk processed, respondents prefer cardboard (89%) because it smells better than polyethylene packaging and the taste is not altered by sunlight.

The analysis concerning the type of shop revealed that some consumers were affected by criteria 1, 2 and 3 in the case of cheese and yogurt.

In addition, consumption of cheese and yogurt is correlated with household income levels. Similarly, consumers with higher income level are more looking to quality and hygienic properties of dairy products[20].

With regards to brand, when questioned if they would like to buy a product from a famous brand rather than an unknown brand, 42% of the consumers responded "Yes". Among these, 8% affirmed that they could pay up to 2 times more in relation to the unknown product. The consumer is more faithful to drink one milk brand.

Also, geographical location can affect consumers behavior; dairy products of local origin seems to be more attractive for rural consumers comparing to semi-urban and urban consumers (Fig. 1). This difference may be due to rural consumers preference to purchase dairy products, in local markets or small shops near their houses. However, from Fig. 1, no difference was seen between urban and semi-urban consumers; this is meaning that the geographic location has the same effect on both consumers' location.

The results about "Publicity" of dairy products and perception of consumers behavior indicated that the consumers did not take it as an important factor (criteria 5). The majority of consumers think that advertising is only intended to commercialize and to realize profits at the expense of the consumer.

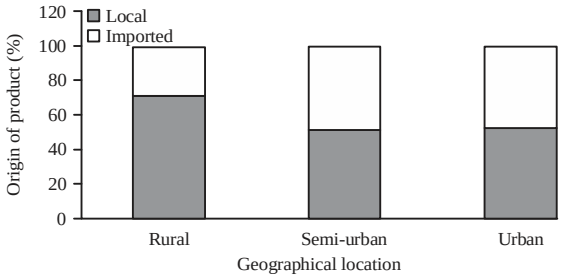

Fig. 1: Consumer's behavior according to geographical location and its effect on the origin of dairy products (imported or local) purchased

In this study, results concerning "Trust" and "origin of products" are in concordance with those published by Hysen *et al.*[14], however, packaging, shop type and brand effects are contrary to the results of Hysen *et al.*[14]. This may be due to context difference.

Analysis of milk and dairy product consumption

Raw milk and processed milk consumption: In this study, we examined consumers purchasing behavior of nine types of milk. Table 5 shows respondents purchasing frequency for each type of milk.

Raw milk was bought less in comparison with pasteurized and sterilized milk. Also, consumption of raw milk was very heterogeneous across the total sample. The annual amount consumed was 160 L per household.

Despite the good hygienic and physicochemical qualities of raw milk from this region[21], it remained the less consumed type, with 58% of respondents which declare not consuming raw milk. This could be explained by the fear of problems caused by raw milk consumption like nausea[22], bad taste, or smell of manure[23].

Moreover, the regional effect was significant on milk consumption ($p<0.05$) (Fig. 2a), which is could be interpreted by the proximity of dairy farms to rural consumers. Pasteurized milk was the most consumed, due to its affordable price that is subsidized by the Algerian government.

The survey results showed that packaged sterilized milk or UHT was significantly ($p<0.05$) less consumed than pasteurized and raw milk. Thus, over half of the respondents (57%) did not buy UHT due to the expensive price. According to their statements, this milk has a better quality. Indeed, the purchase of sterilized milk was significantly ($p<0.05$) higher in urban areas compared to other areas (Fig. 2b). Also, consumption of pasteurized and UHT milk was higher among the urban households; however, raw milk consumption, was popular in the rural areas of Guelma province (Fig. 2).

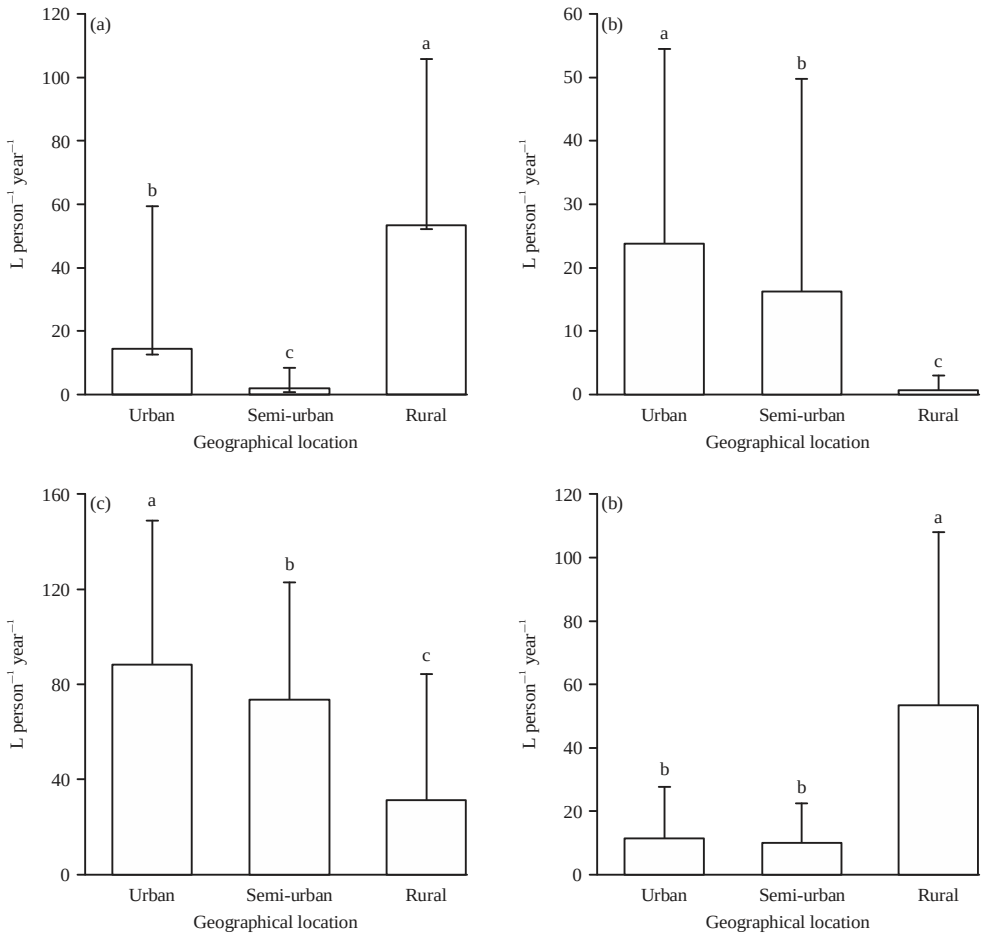

Fig. 2(a-d): Effect of regional location on individual consumption of (a) Raw milk, (b) UHT, (c) Pasteurized milk, (d) Traditional fermented milk

Each bar represents the Mean±SD. Means which are denoted by different letters (a, b and c) indicate significantly different values (ANOVA followed by LSD test, p<0.05)

Table 5: Consumption level of milk and processed milk

Products per units	HC (%)	ACP	Minimum ACP*	Maximum ACP
Farmer milk (L)	42	22.90±45.21	0	182.50
Powder milk (kg)	49	2.18±3.36	0	16.00
Pasteurized milk (L)	77	65.03±59.90	0	243.00
UHT milk (L)	43	13.97±28.04	0	160.00
Condensed milk (kg)	11	1.23±4.48	0	26.00
Traditional fermented milk (L)	72	24.45±38. 71	0	182.50
Industrial fermented milk (L)	18	2.77±7.46	0	53.00
Traditional "Rayeb" (L)	17	3.71±13.45	0	110.00
Industrial "Rayeb" (L)	1	0.00	0	0.00

HC (%): Households consumption (%), ACP: Annual consumption per person, UHT: Ultra-high temperature, *Mean

In rural areas, the low level of education of the majority of respondents and their limited knowledge of nutrition and dairy products creates misconceptions that may be a significant constraint ($p<0.01$) to the development of milk consumption. A significant proportion of rural respondents (66%) considers packaged milk as artificial, non-natural and rich in added additives. These results are in concordance with the study of Esfarjani *et al.*[24] in Iran, which reported the same trend: In rural areas, the majority of individuals consumed raw milk, but packaged milk was the main milk in urban areas.

Also, results showed that the powdered milk is consumed moderately (Table 5). This kind of milk is the most available products in the market. It comes from different countries under various brand and different packaging. Interestingly,

condensed milk was the least frequently purchased dairy product, with 89% indicating they never purchased concentrated milk.

The traditional fermented milk (Lben), produced after milk fermentation, was bought by a considerable proportion of households. The average amount purchased was much higher compared to that reported by Benjelloun *et al.*[25] in Morocco (12 L person^{-1} year^{-1}). However, a very low consumption of industrial Lben was observed (Table 5).

Dairy products consumption: The most popular product was the yogurts, which was consumed by a high percentage of households, followed by cheese, dairy desserts and butter. Fresh cream and rancid butter were the least consumed. A real change of consumer eating habits was shown (Table 6), for example the yogurt was widely consumed at a rate of 15.96 kg person^{-1} year^{-1}, either 125 g to the weight of the pot, this amount would be, on average, 127.68 pots person^{-1} per year seems to have replaced traditional dairy products (traditional fermented milk and traditional "Rayeb").

These results show that yogurt consumption has become very important in Algeria; this is in concordance with results obtained by Boubchir-Ladj[26]. This change in food behavior could be affected by modernization in Algerian food industry.

Analysis of overall individual consumption of Milk Equivalent (kg): The average annual consumption of dairy products was 161.78 kg of ME, with a quantity of 101 kg which was provided by the liquid milk, 16.87 kg by yogurt and 21.1 kg by butter and 21.81 kg from other dairy products. Individual consumption varies between 36 and 312 kg of milk equivalents per year either a Coefficient of Variation (CV) is 70%. In fact, in many households, individual consumption of milk was low, indicating a low living standard. This consumption still not sufficient with recommended annual intake of milk and milk products consumption set by World Health Organization (200 kg person^{-1})[8].

Factors influencing consumption milk equivalents per year per person (kg): Table 7 shows that the adjusted model gave a good prediction of consumption in Kg milk equivalent per year (adjusted $R^2 = 0.772$, $p = 0.000$).

Type III sum of squares showed the contribution for prediction, the geographical location being the most effective variable. This variable explained 43.98% of the variation in consumption in the model ($p<0.01$). The individual consumption expressed in kilogram milk equivalents per year per person was significantly ($p<0.0001$) higher in urban area compared to other regions. This could mean that the level of urbanization increases milk and milk products consumption. Ruel and Garrett[23] found that urban children had better nutritional status than their counterparts in rural areas who were associated to a poorer family environment.

The majority of the households were very highly affected by the children presence in their consumption. Indeed, the number of children per household contributes to 20.80% ($p<0.001$). Children number per household is a very important factor in milk consumption: 20 households with 5 children show a higher average consumption of milk (284 kg of milk equivalents per year per person), 32 households with 2 children (100 kg of milk equivalents per year per person).

Table 6: Level of consumption of dairy products

Dairy products	HC (%)	ACP*	Minimum ACP	Maximum ACP
Yogurts (kg)	84	15.96±16.74	0	55.00
Cheese (kg)	80	0.72±1.12	0.36	4.30
Butter (kg)	46	1.24±2.26	0	13.00
Dairy desserts (kg)	54	9.81±21.44	0	121.66
Fruity milk (L)	40	16.52±34.77	0	158.00
Fresh cream (kg)	12	0.42±1.49	0	8.00

HC (%): Households consumption(%), ACP: Annual consumption per person, *Mean±SD

Table 7: Results for predicting variation factors of consumption in kilogram milk equivalents per year per person

Items	Mean square	p	Contribution (%)
Age	4875.66	0.094	1.75
No. of older per household	709.12	0.520	0.25
No. of children per household	114565.94	<0.001	20.80
Gender	0.63	0.985	0.00
Geographical location	122567.10	<0.000	43.98
Price	25547.22	<0.03	9.17
Monthly income	59389.58	<0.026	20.76
Education level	8339.56	0.188	2.99

$R^2 = 80\%$ (adjusted $R^2 = 0.772$)

Indeed, this study showed that the presence of children in households increase in significant manner ($p<0.001$) the average individual level of consumption within households.

In other words, the presence of children is an effective factor that positively influences the level of purchase of milk and dairy products[27].

These results are consistent with data reported by Widiati *et al.*[28] which showed that children aged <12 years old tended to consume milk routinely.

Additionally, the households with greater presence of young children less than 12 years of age were generally less concerned about price and more interested in purchasing safe milk products. Similar observations were reported by Trung *et al.*[11].

One of the major problems that present a barrier to consumption of milk and dairy products was the price, which was negatively correlated with consumption level ($r = - 0.48$, $p<0.05$). Indeed, the price contributes to 9.17% in the variation of the consumption level. In children, milk consumption varies according to the household's income level. Among the factors that affect the milk consumption, the effect of household income who was positive. Indeed, a positive correlation was observed between household income and the level of consumption ($r = 0.39$, $p<0.05$). This implies that the households who have higher income levels will buy more milk to satisfy their consumption needs. Also, these results contribute to the improvement of the behavior of dairy consumers. This improvement necessarily involves increasing the purchasing power of consumers in order to access dairy products. This finding was in agreement with results reported by Hysen *et al.*[14].

Ates and Ceylan[29] reported that consumption of milk and/or milk products is greater compared with other foods rich in proteins. The age of person who holds power to make decision of milk consumption did not significantly influence the milk consumption ($p>0.05$).

However, in this study, the age of children appear as a very important factor in household purchasing patterns. Children who are older than 5 years influence their parents in a significant manner ($p<0.05$) in their purchasing choices.

Several studies have found that gender in the household significantly influence ($p<0.05$) decisions on milk purchases[30]. Female-headed households were found to be significant ($p<0.05$) in affecting dairy products expenditure[30]. Unlike in this study, the effect of gender of the head of household had no significant effect ($p = 0.985$). From literature mother's education had a significant influence ($p<0.05$) on the family's nutritional status. Because, generally mother held the household finance and determines level of milk consumption[31,32]. Also, the educational level was not significant on consumption. However, in this study, a positive correlation between "Educational level" and "Milk products purchasing choices" was noted.

CONCLUSION

Taste becomes the most important criterion for consumer perception of milk products, followed by other factors such as trust, health benefits, packaging and origin of product. The results of the survey on the consumption patterns of dairy products show that whatever the type of household, the most purchased dairy products are mainly pasteurized milk and yogurt. Another significant finding of this study signifies that milk consumption in Guelma province was not sufficient with respect to the level of recommended annual intake of milk and milk products consumption set by World Health Organization. This consumption was affected by geographical location, the number of children per household, price and monthly income.

SIGNIFICANCE STATEMENTS

- The socio-economic situation of the household has an effect, but mainly regarding the quantity and type of dairy products consumed, thus, greater and more varied consumption is observed among wealthier socio-economic groups. However, geographic area, price and the number of children are the main limiting factors in consumption for most households
- The findings of this research can be used to improve the management of dairy supply chains

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