Reasons for human milk donation according to different *per capita* income

João Antonio Barbosa dos Santos [1]
Vilneide Maria dos Santos Braga Diégues Serva [2]
Maria de Fátima Costa Caminha [3]

[1-3] Faculdade Pernambucana de Saúde. Rua Jean Emile Favre, 422. Imbiribeira. Recife, PE, Brasil. CEP: 51.200-060. E-mail: joaobarbosa_01@hotmail.com

Abstract

Objectives: to identify the reasons for human milk donation according to different per capita income in donors who were registered in the human milk bank and center to promote breastfeeding at Instituto de Medicina Integral Professor Fernando Figueira (HMB/CIAMA/IMIP).

Methods: this is a cross-sectional study. Data collection was carried out at the HMB/CIAMA/IMIP from March to May 2015. The sample was consisted of 155 donors. The data were obtained by applying a form elaborated by the researchers. For the data analysis the SPSS 13.0 software for Windows and Excel 2010 were used.

Results: the reasons most mentioned by the donors with a per capita income of < 0.5 minimum wages were, in descending order: excess of milk /avoid wasting, solidarity, altruism and return to work. Donors with a per capita income of ≥ 0.5 minimum wages were, excess of milk /avoid wasting and return to work were the main reasons for donation, followed by solidarity and altruism.

Conclusions: the reasons for human milk donation varied according to the per capita income. This knowledge will contribute with the necessary information for planning/improved interventions to capture new donors locally and nation wide.

Key words *Breastfeeding, Lactation, Milk human*

Introduction

Breastfeeding is the best way to provide food for the infant, established as the gold standard method to feed a newborn and as for a full term and premature.[1,2] It is considered an effective and low-cost intervention to reduce infant morbimortality, as well as contributing to the holistic health of mother-child combination.[3]

Due to these major impacts, a public awareness about the benefits of breastfeeding (AM) and the training for the health professionals on this topic have been increasingly valued in the public and private health system,[4] reflecting on since 1991, when the World Health Organization (WHO), in association with the United Nations Children's Fund (UNICEF), to establish its goal in order to promote, protect and support breastfeeding worldwidely.[5]

The medical literature contains strong evidence about the benefits of breastfeeding,[6] such as optimizing children's growth and physical and mental development and extensive protection against the main diseases that occur later in life. Recent data indicate that breastfeeding is an effective food strategy to prevent necrotizing enterocolitis in the premature population,[7] also presenting advantages for women's health, as for the increase of postpartum infertility period, a greater facility in the pregestational weight acquisition and risk reduction of developing breast and ovarian cancer.[8]

Epidemiological studies show that in developing countries, exclusive breastfeeding (EBF) until the sixth month of the baby's life can prevent more than 1.3 million deaths annually in children under five years old,[9] favouring a great reduction in infant mortality rates.[10]

According to the Brazilian pediatrics society, breastfeeding should only be contraindicated, based on maternal conditions, in only exceptional situations, such as an infection by human immunodeficiency virus (HIV), human T-lymphotropic virus (HTLV) and the use of some types of medication. Other situations should be analysed and breastfeeding could be allowed, depending on the context.[11]

Within this scenario, it is considered essential to have human milk in quantities that are allowed to be offered in emergency situation, to all infants that are clinically accepted and, do not have breast milk, a situation in which the human milk banks (HMB) constitute as a solution.[12]

The HMB are places to stimulate and promote breastfeeding, besides to fulfil the function to collect and process raw human milk (LHOC) and distribute pasteurized human milk (LHOP). Referring to a non-profitable establishment in which the commercialization of their products is prohibited, the participation of women donors is fundamental so that the HMB can fulfil the objective of collecting, processing and distributing milk to the infants who are in need.[13]

The Brazilian Ministry of Health (MS) defines human milk donors all women who are healthy and wish to donate the excess of produced milk freely and at their own will.[14] Therefore, knowing the reasons that lead to donation is extremely important[15] to propose interventions that favours to promote donors in contributing to fill the milk supply at the HMB.[16]

Policies to stimulate breastfeeding are also indispensable for women living in inadequate environmental conditions, such as those who have low schooling level and work outside of home, as these factors are proven to be related to early weaning.[15]

Evidence suggests that socioeconomic conditions influence the practice of breastfeeding.[15] However, we formulated the hypothesis the reasons for donation may vary according to the different *per capita* income (PCI). Although, we did not find studies that analyses specifically PCI donor´s that correlate their reasons to donate. This study aimed to identify the reasons for donating human milk according to the PCI donors registered at the HMB and at the Centro de Incentivo ao Aleitamento Materno do Instituto de Medicina Integral Prof. Fernando Figueira - IMIP (HMB/CIAMA/IMIP). (Incentive and Support Center for Breastfeeding).

Methods

This cross-sectional study was carried out at the HMB/CIAMA/IMIP. IMIP is a friendly hospital for children and a non-profitable teaching and research institution located in the city of Recife - PE, which exclusively attends patients from the Brazilian Public Health System (SUS). In 1987 the Brazilian Ministry of Health entitled the HMB at IMIP as a reference center for breastfeeding in Pernambuco State.

The sector provides outpatient care, guidance for pregnant women, procedures to treat breast problems after delivery and collecting, processing and distributing breast milk. The milk supply benefits more than 2,800 children per year at IMIP and other hospitals, with a storage capacity of more than 1,500 liters of milk.

This study lasted about 10 months, collecting data from March to May 2015. The sample was

consecutive, consisting of all new donors who agreed to participate. After applying the eligibility criteria (as being a new donor at the HMB), an invitation to participate was made for this study. In the case of adolescent donors, the procedures mentioned above were also carried out with their legal guardian.

It was requested to sign an Informed Consent Form (TCLE) by donors 18 years or older or by a legal guardian, and when necessary, the consent form from the adolescent. In the case of at home donors, the invitation was made by telephone and the TCLE was sent by a driver from the HMB who had previous training.

At the same moment while signing the TCLE, a telephone contact was made to all the donors for an appointment, aiming to avoid any differences in the approach in applying the questionnaire prepared by the researchers, composed exclusively of opened questions. However, in case of more than one answer, the donors were asked to choose only the one they considered the most relevant.

The sample consisted of 160 donors, and only one person was younger than 18 years old. The researchers decided to exclude her from the data analysis. There were four losses and the reasons were: refusal to participate of the survey due to "lack of time" (two cases) and the donor did not have a telephone number to be contacted (two cases). Thus, 155 women had their data analysed. These losses represented 3.12% of the total donors.

For a better description of the results, we highlighted that the gross total family income was the sum of the monthly income of all the household members. The PCI divided the gross monthly household income by the number of the household members. In Brazil, it is common to use the amount of 0.5 minimum wage (MW) per month of the PCI as a measurement of the poverty line.[8] The donors were classified into two groups, those with PCI of <0.5 MW and those with PCI of ≥ 0.5 MW.

The data were typed as double entry in the Spreadsheet Excel program and the SPSS 13.0 software for Windows and Excel 2010 were used. All the tests were applied with 95% of confidence. To verify the association existence, the chi-square test and the Fisher's exact test were used for the categorical variables, and $p \leq 0.05$ was considered statistically significant.

This research followed the resolution precepts 466/2012 of the Brazilian National Health Council and the project was approved by the Human Research Ethics Committee at IMIP. There was no compensation payment or costs to the subjects in this research. In case of any doubts and /or problems regarding the practice of breastfeeding, the women were directed to a follow up by the professionals from the HMB, characterizing immediate benefits to the subjects who participated in this research. There were no conflicts of interest.

Results

The sample was composed of 155 donor and ages ranged from 18 to 43 years old. The total household gross monthly income was an average of R$ 6,954.45 (Brazilian Currency R$= Real), with a minimum value of R$ 150.00 and the maximum value of R$ 100,000.00 (sd = 11,230,395). The number of household members living in the same place ranged between 3 and 7.

Table 1 contains information about the sociodemographic characterization of nursing mothers and in Table 2 shows the data related to the description of the donors regarding their HMB and obstetric medical history at IMIP.

The relation between *per capita* income and the sociodemographic variables are shown in Table 3 and the relation among PCI and their HMB and obstetric history can be seen in Table 4.

The PCI had a statistically significant association ($p<0.05$) with age, race, schooling, marital status, working out of home, at home donor, hometown, number of pregnancies and the main reason to donate.

Discussion

When associated PCI donors to the main reason to donate, a statistically significant ($p \leq 0.05$) relation was observed, and the most cited reasons by the group with PCI of <0.5 MW, in descending order were: excess of milk/avoid wasting, solidarity, altruism and return to work, while donors with PCI of ≥ 0.5 MW, excess of milk / avoid wasting and return to work were the main reasons, followed by solidarity and altruism. Thus, these results confirmed the hypothesis that the reasons for human milk donation might vary according to the PCI.

The medical literature contains a wide variety of researches, placed in several cities in Brazil, like this present study, demonstrates which different reasons/factors contributed to initiate the donation.[1,17-20] However, no studies were found that specifically relate to the donor's PCI for each reason to donate, making this present study the pioneer on this context.

The highest number of donors with PCI of ≥ 0.5 MW could be justified by the high rate of women

who work, in order to complement the domestic income and to have a better acquisition of schooling level. As expected, this group had more information about the health services, including about HMB, thus, according to the medical literature, people with a greater acquisition power have greater access to the health services,[5] which this might have been a bias in our study.

According to the WHO, variations in the income can directly influence social indicators,[5] a fact that may explain why the PCI had a statistically significant association with many demographic data. Most of the donors claimed to be non-white, for example, they had a PCI of <0.5 MW, whereas the majority of who claimed as white presented a PCI of ≥ 0.5 MW, corroborating with the literature data on racial-economic inequality are still found in our country. The highest prevalence of donation for returning to work in the group with the highest income may justify the highest unemployment rate in the lower income group.

An extensive variation in the monthly gross total family income was evidenced, but the economic condition did not affect the main reason to donate

Table 1

Donors' socio-demographic characterization in the human milk database. Recife, 2015 (N=155).

Variables	N	%
Age		
Less than 30	81	52.3
30 or more	74	47.7
Race		
Black/Mixed	89	57.5
White	63	40.6
Other	3	1.9
At home donor		
Yes	40	25.8
No	115	74.2
Schooling (last grade concluded)		
1st to 8th grade	30	19.4
9th or higher grade	125	80.6
Per capita income (minimum wage)		
<0,5	61	39.4
≥0,5	94	60.6
Living in		
Recife	94	60.6
Metropolitan area	61	39.4
Marital status (married/stable union)		
Yes	119	76.8
No	36	23.2
Working		
Yes	70	45.2
No	85	54.8
Student		
Yes	23	14.8
No	132	85.2

Table 2

Donors' characterization regarding obstetric and human milk bank historical past. Recife, 2015 (N=155).

Variables	N	%
Number of pregnancies		
One	68	43.9
More than one	87	56.1
How did you know about the services offered by the HMB ?		
Media	40	25.8
Banners	4	2.6
People giving information	27	17.4
Health professional	84	54.2
Main reason to donate		
Excess of milk or avoid wasting	57	36.8
Solidarity	45	29.0
Altruism	25	16.1
Returning to work	28	18.1
Did you receive orientation about donating breast milk in your last pregnancy?		
Yes	57	36.8
No	98	63.2
Who oriented you about donating breast milk?		
Health professional	51	89.5
Other	6	10.5
Have you ever received milk from HMB before?		
Yes	6	3.9
No	149	96.1
Have you ever donated breast milk?		
Yes	26	16.8
No	129	83.2
Difficulties to donate		
Yes	15	9.7
No	140	90.3
If so, which difficulty?		
Lack of flasks	3	20.0
Storage for flasks	1	6.7
Delivery of the donation to HMB	10	66.6
Others	1	6.7

HMB= Human Milk Bank.

Table 3

The relation between per capita income and the donors' sociodemographic variables. Recife, 2015.(N=155).

Variables	*Per capita* income (MW***)				*p**
	<0,5 MW		≥0,5 MW		
	n	%	n	%	
Age					
Less than 30	43	70.5	38	40.4	<0.001 *
30 or more	18	29.5	56	59.6	
Race					
Black/Mixed	46	75.4	43	45.7	<0.001 **
White	13	21.3	50	53.2	
Other	2	3.3	1	1.1	
At home donor					
Yes	5	8.2	35	37.2	<0.001 *
No	56	91.8	59	62.8	
Schooling(last grade concluded)					
1st to 8th grade	26	42.6	4	4.3	<0.001 *
9th or higher grade	35	57.4	90	95.7	
Per capita income (minimum wage)					
<0,5	22	36.1	72	76.6	<0.001 *
≥0,5	39	63.9	22	23.4	
Living in					
Recife	38	62.3	81	86.2	0.001 *
Metropolitan area	23	37.7	13	13.8	
Marital status (married/stable union)					
Yes	10	16.4	60	63.8	<0.001 *
No	51	83.6	34	36.2	
Working					
Yes	7	11.5	16	17.0	0.473 *
No	54	88.5	78	83.0	

* Chi-square test; ** Fisher's exact test; *** Minimum wage. There was no significant association between "*per capita* income" and "student".

human milk, similar in comparing groups, which would facilitate the planning and dissemination of campaigns to stimulate human milk donation promoted by the HMB, aiming to receive new donors and to increase human milk supplies.

Our questionnaire was composed by opened questions, but because of the quantitative nature, to facilitate the statistical analysis and the association between the variables, all the interviewees were asked to choose only the answer that they considered the most relevant, which may have limited our results.

Although 60.6% of the donors had PCI of ≥ 0.5 MW, the alarming 39.4% still had PCI of <0.5 MW. These data demonstrate the need to create/maintenance of financial measurement aid / schooling for the needy population, regarding that the low socioeconomic status is a major obstacle to fulfil child development.[11]

The donors' profiles reflected what is described in the literature, characterized by young adults, married, employed and with different schooling levels.[10,20,21] The design of this profile is important, thus, these characteristics exert, albeit indirectly, a positive effect on the act of donating, contributing for a planning / strategies improvement to attract new donors.

In Alencar *et al*.[17] study, altruism is reported by most women as the main reason for donation, which diverges from the current outcome. According to the present study, the fact that the woman had previously received milk for another child or that had already donated the milk to the HMB did not show statistically significant relation with a new donation,

Table 4

The relation among *per capita* income, obstetric and the human milk bank historical past. Recife, 2015 (N=155).).

Variables	*Per capita* income (MW***)				*p**
	<0,5 MW		≥0,5 MW		
	n	%	n	%	
Number of pregnancies					
One	16	26.2	52	55.3	0.001 *
More than one	45	73.8	42	44.7	
How did you know about the services offered by the HMB?					
Media	13	21.3	27	28.7	0.339 **
Banners	2	3.3	2	2.1	
People giving information	8	13.1	19	20.2	
Health professional	38	62.3	46	49.0	
Main reason to donate					
Excess of milk or avoid wasting	30	49.3	27	28.7	<0.001 *
Solidarity	19	31.1	26	27.7	
Altruism	11	18.0	14	14.9	
Returning to work	1	1.6	27	28.7	
Did you receive orientation about donation?					
Yes	20	32.8	37	39.4	0.510 *
No	41	67.2	57	60.6	
Who oriented you about the donation?					
Health professional	18	90.0	33	89.2	1.000 **
Others	2	10.0	4	10.8	
Have you ever received milk before?					
Yes	2	3.3	4	4.3	1.000 **
No	59	96.7	90	95.7	
Have you ever donated breast milk?					
Yes	8	13.1	18	19.1	0.446 *
No	53	86.9	76	80.9	
Difficulties to donate					
Yes	3	4.9	12	12.8	0.181 *
No	58	95.1	82	87.2	
If so, which difficulty?					
Lack of flasks	0	-	3	25.0	0.440 **
Storage for flasks	1	33.3	0	-	
Delivery of the donation to HMB	2	66.7	8	66.7	
Others	0	-	1	8.3	

HMB= Human Milk Bank; * Chi-square test; ** Fisher exact test; *** Minimum wage. The PCI only showed a statistically significant association between the "number of pregnancies" and the "main reason for the donation".

diverging from what is found in the literature.[18]

Our results showed that 9.7% of the donors were facing difficulties in donating, alerting for the need of improvement in the HMB management, suggesting that it is necessary to aware/train not only the population about the importance of maintaining human milk supplies, but as well as the people who manage these establishments, so that there is a rapid solution for problems such as this one.

The media appeared as important means to advertise services offered at the HMB, signalling the relevant information about breastfeeding in the media such as TV, newspaper and social networks.

According to the literature, teams with trained professionals managed to achieve a growth of up to 29% in the incidence and the prevalence of breastfeeding compared to untrained teams.[1] Our results proved that there is still a large number of women with no information about donating human milk, and at the same time reveals the importance of guidance offered by health professionals in stimulating the donation, promoting and supporting breastfeeding, although a few women are being oriented, most of them referred the health professionals as the main source of knowledge about breastfeeding, signalling the need for constant training for these professionals, aiming for mothers' schooling and promoting breastfeeding national wide.

The knowledge for reasons to donate varies according to the *per capita* income contributing to the information about the need to create/improving promotion measurements on breastfeeding promoted at the HMBs, thus, we suggest that further studies should aim to improve the quality of assistance offered to nursing mothers and infants, and positively impacting on the practice, the incidence and the prevalence of breastfeeding in Brazil.

References

1. Galvão MTG, Vasconcelos SG, Paiva SS. Mulheres doadoras de leite humano. Acta Paul. Enferm. 2006;19 (2): 157-61.
2. Vannuchi MTO, Monteiro CA, Réa MF, Andrade SM, Matsuo T. Iniciativa hospital amigo da criança e aleitamento materno em unidade de neonatologia. Rev Saúde Pública. 2004; 38 (3):422-8.
3. Tamasia GA, Venâncio SI, Saldiva RDM. Situação da amamentação e alimentação complementar em um município de médio porte do Vale do Ribeira, São Paulo. Rev Nutr. 2015; 28 (2): 143-53.
4. Vieira GO, Reis MR, Vieira TO, Oliveira NF, Silva LR, GiuglianiERJ. Tendência dos indicadores de aleitamento materno em uma cidade do Nordeste brasileiro. J Pediatr. 2015; 91 (3): 270-7.
5. World Health Organization. Global strategy for infant and young child feeding. Geneva; 2003.
6. Jaldin MGM, Pinheiro FS, Santos AM, Muniz NC. Crescimento infantil comparado com as referências NCHS e o padrão WHO/2006. Rev Nutr. 2013; 26 (1): 17-26.
7. Schanler RJ. Em tempo: leite humano é a estratégia alimentar para prevenir a enterocolite necrosante. Rev Paul Pediatr. 2015; 33 (2): 131-3.
8. Esteves TMB, Daumas RP, Oliveira MIC, Andrade CAF, Leite IC. Fatores associados à amamentação na primeira hora de vida: revisão sistemática. Rev Saúde Pública. 2014; 48 (4): 697-703.
9. Morris SS, Cogill B, Uauy R, Effective international action against undernutrition: why has it proven so difficult and what can be done to accelerate progress? Lancet. 2008; 371 (9612): 608-21.
10. Cavalcanti SH, Caminha MFC, Figueiroa JN, Serva VMSBD, Cruz RSBLC, Lira PIC, Filho MB. Fatores associados à prática do aleitamento materno exclusivo por pelo menos seis meses no estado de Pernambuco. Rev Bras Epidemiol. 2015; 18 (1): 208-19.
11. Júnior DC, Burns DAR, Lopez FA. Tratado de pediatria. 3 ed. Manole; 2014.
12. Almeida JAG, Novak FR. Amamentação: um híbrido natureza-cultura. J Pediatr. 2004; 80 (Suppl. 5): S119-25.
13. Maia PRS, Almeida JAG, Novak FR, Silva DA. Rede Nacional de Bancos de Leite Humano: gênese e evolução. Rev Bras Saúde Matern Infant. 2006; 6 (3): 285-92.
14. Morgado CMC, Werneck GL, Hasselmann MH. Rede e apoio social e práticas alimentares de crianças no quarto mês de vida. Ciênc Saúde Coletiva. 2013; 18 (1): 367-76.
15. Brasil. Ministério da Saúde. Recomendações técnicas para funcionamento de bancos de leite humano. Brasília, DF; 1987.
16. Moraes PS, Oliveira MMB, Dalmas JC. Perfil calórico do leite pasteurizado no banco de leite humano de um hospital escola. Rev Paul Pediatr. 2013; 31 (1): 46-50.
17. Alencar LCE, Seidl EMF. Breast milk donation and social support: reports of women donors. Rev Latino-Am Enferm. 2010; 18 (3): 381-9.
18. Loureiro AOF, Suliano DC. As principais linhas de pobreza utilizadas no Brasil. Instituto de pesquisa e estratégia econômica do Ceará; 2009.
19. Alencar LCE, Seild EMF. Doação de leite humano: experiência de mulheres doadoras. Rev Saúde Pública. 2009; 43 (1):70-7.
20. Osbaldiston R, Mingle LA. Characterization of human milk donors. J Hum Lact. 2007; 23 (4): 350-7.

21. Thomaz ACP, Loureiro LVM, Oliveira TS, Montenegro NCF, Júnior EDA, Soriano CFR, Cavalcante JC. The human milk donation experience: motives, influencing factors, and regular donation. J Hum Lact. 2008; 24 (1): 69-76.

Received on June 19, 2016

Final version presented on February 16, 2017

Approved on March 29, 2017