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Characterization of Human Milk Donors

Richard Osbaldiston, PhD, and Leigh A. Mingle

Abstract

The primary objective of this research was to create a detailed characterization of human milk donors, including descriptive information about demographics and lifestyle, involvement with the milk bank, reasons for donating, problems encountered while breastfeeding and pumping milk, barriers to donating milk, affective experiences, and personal values. Data were collected via telephone interview of 87 donors and 19 nondonor controls. Few relationships were found between the descriptive information and amount of milk donated. Donors reported fewer problems pumping milk than nondonors. Strategies for recruiting new donors and strategies for increasing donation amounts are presented. *J Hum Lact.* 23(4):350-357.

Keywords: milk donors, human milk, characteristics

The benefits of feeding human milk to infants have been well-documented.^{1,2} In fact, human milk is so beneficial for infants that it is even given to some infants whose mothers cannot feed them. Thus, collecting excess human milk from lactating mothers is an important social service.

Human milk banks have been in existence for more than 100 years, and the procedures for processing donated milk are well systematized.^{3,4} Getting donations is the first step in this process, and milk banks depend on donations from lactating mothers who have surplus milk. To date, only a small amount of research has looked at the question of who donates and why.

Arnold and Borman briefly tried to answer the question, "What motivates the ideal donor?"⁵ They offered 2 explanations. First, donors did not want to waste milk that they worked hard to express, and second, donors

wanted to help some other infant or child. These authors did not offer any quantitative evidence to support these conclusions; rather, they drew on their experience working in human milk banks.

Azema and Callahan attempted a more systematic characterization of donors in France.⁶ They sent a voluntary 1-page mail survey to 150 donors and received 103 responses (69%). They asked about employment, family size, problems during breastfeeding, and reasons for donating milk. Similarly to Arnold and Borman,⁵ Azema and Callahan⁶ found that the 2 primary reasons for donating were, "Had too much milk and preferred to donate rather than dispose of it" and "To help others."

Given that the success of human milk banks depends on donors, having an adequate characterization of donors seems quite important. The primary objective of this study was to help provide a more quantitative and complete picture of donors. Specifically, we sought to measure demographic and lifestyle characteristics, procedure for involvement with the milk bank, reasons or motives for donating, problems while breastfeeding and pumping milk, barriers to donating, affective experiences, and personal values.

This study also had 2 secondary objectives. First, we wanted to understand why donation amounts vary considerably. Some donors provided only a relatively small amount of milk and others provided a large amount. By understanding how problems and barriers influence the amount of milk donated, the donation experience may be

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enhanced to increase the amount of milk donated. Specifically, we hypothesized that donors who reported more problems with breastfeeding and pumping would donate less milk. Furthermore, we hypothesized that donors who reported greater barriers to donating would donate less milk. Second, we wanted to compare the characteristics of donors to a control group of mothers who had pumped milk and breastfed their children but not donated. Again, we hypothesized that nondonors would report greater barriers to donating and more problems while pumping milk than donors.

Method

Procedure and Participants

The Mothers' Milk Bank at Austin (Tex) teamed up with an undergraduate psychology research methods course at Southwestern University. The students developed a telephone interview, and the milk bank staff provided feedback and technical expertise on the interview script. The milk bank staff mailed cover letters explaining the interview and consent forms to their donors, donors mailed the consent form back, and students telephoned the donors. The survey was entirely scripted, and it took 30 to 45 minutes to administer. The students pilot-tested the survey on their family members (usually their mothers) and conducted 3 practice sessions to standardize their presentations.

The milk bank staff mailed cover letters and consent forms to 324 donors, and 114 donors (35%) voluntarily returned the consent form agreeing to participate in the survey. Interviewers made 4 attempts to make telephone contact with each donor. Each attempt included leaving a message indicating how the donor could contact the interviewer and asking the donor to specify what times of the day were best for completing the interview. By following this procedure, 87 donors were contacted and interviewed. The majority of the nonparticipants simply never answered the phone or returned the messages. All donors lived in central Texas during the time that they donated. At the time of the interviews, 52% of participants provided telephone numbers with the 512 area code, and the remaining 48% provided 21 different area codes.

Of the 87 participants in the research, 27 were interviewed in fall of 2005 and the remaining 60 were interviewed in spring of 2006. Prior to the spring data collection session, 11 items asking about problems pumping milk were added to the interview.

In addition to these 87 donors, 19 other women who had pumped milk while breastfeeding their infants

within the past 3 years were also interviewed to serve as a nondonor control group. These women were invited to participate in the research via e-mail and through personal connections with one of the authors; as such, the control group was a convenience sample. Informed consent was obtained from each control participant at the beginning of the interview. The interview was necessarily modified to exclude parts of it that pertained directly to donating to the milk bank.

All procedures in this research were approved by both the Austin Multi-Institutional Review Board and Southwestern University's Human Subjects Research Committee.

Measures and Statistical Methods

Demographic, lifestyle, and involvement information. To collect demographic data, participants were asked their age (in 5-year brackets), education level attained, employment status, household income, marital status, ethnicity, and family size. Furthermore, to assess their lifestyles, participants were asked about donating blood or organs, exercise habits, eating habits, alcohol drinking habits, and type of pump used. To assess how they got involved with the milk bank, donors were asked how they first heard about it, how long passed between when they first heard about it and when they contacted the bank, and how long the screening process took.

Reasons for donating milk. Participants were read a list of 11 possible reasons for donating milk, and they were asked to use a 0 to 10 scale (ranging from *not at all for this reason* to *very much for this reason*) to indicate how much each reason influenced them to donate. In addition, the Volunteer Functions Inventory (VFI)⁷ was administered. The VFI is a general tool that is applicable to any kind of volunteer activity, and in this case, participants were asked to think of donating breast milk as volunteering. It measures 6 motives for volunteering, that is, 6 functions that volunteering can serve for a person: (1) an outlet for expressing a person's *values*, (2) an opportunity to learn new experiences and develop greater *understanding*, (3) an opportunity to be *social* with friends, (4) an opportunity to gain *career* or work-related experience, (5) an opportunity to engage in activities that *protect* the ego from negative features of the self, and (6) an opportunity to engage in activities that *enhance* the positive strivings of the ego. A modified, 17-item version of the VFI was administered to donors. Participants responded to each reason for volunteering on the VFI using a 0 to 10 scale in which 0 corresponded to *not important at all* and 10 corresponded to *very important*.

Problems while breastfeeding and pumping. Following closely from Azema and Callahan, participants were asked how breastfeeding went for them, using the scale *excellent, good, fair, and poor*, if they had engorgement, cracked or chapped nipples, or breast infection, and if their babies had thrush, slow weight gain, or reflux.⁶ A *yes or no* scale was used for the items about problems.

Furthermore, donors were read a list of 11 statements that expressed a problem encountered while pumping milk (these items were not included on the fall 2005 version of the interview and thus the sample size was only 60 participants). Donors were explicitly asked to think of pumping milk for the milk bank (as opposed to for their own child) as they responded to these statements. Donors responded using a 0 to 10 scale, where 0 indicated that they *strongly disagreed* with the statement, 5 indicated that they held a *neutral opinion*, and 10 indicated they *strongly agreed* with the statement. Finally, participants were asked what kind of pump they used (*manual pump, battery operated, electric personal grade, electric hospital grade, or other*) and how they obtained it (*rented, purchased, rented and purchased, borrowed, or received as gift or favor*).

Barriers to donating. Donors were read a list of 11 items that were potential barriers to donating, and they were asked to respond to each item using a 0 to 10 scale ranging from *not a problem at all to a very large problem*. These items were deemed to be face valid due to comments and feedback on earlier drafts of the survey from milk bank staff and other mothers.

Positive and Negative Affect Schedule. The Positive and Negative Affect Schedule (PANAS) consists of adjectives that describe emotions (excited, upset, inspired, nervous, determined, scared, enthusiastic, afraid, interested, and distressed).⁸ Donors were read an adjective describing an emotion and were asked to report how much donating made them feel that way using a 0 to 10 scale ranging from *not at all to very much*.

Personal values. A values survey was developed by drawing on the research by Struch, Schwartz, and van der Kloot that identified 8 fundamental human values: power, self-direction, tradition, security, achievement, tolerance, pleasure-seeking, and social concern.⁹ Spirituality was added as a ninth value. Donors were read a 1-sentence definition of a value (eg, "Tradition is defined as respecting and being committed to social or religious customs and ideas.") and then asked to rate the importance of the value using a 0 to 10 scale ranging from *not at all important to a very important guiding principle*.

Table 1. Demographic Information About the Samples of Donors and Nondonors*

Item	Responses	Donors (%)	Nondonors (%)
Age, y	25-29	18	26
	30-34	48	37
	35-39	25	32
Education	Less than college degree	17	5
	4-year college degree	53	32
	Postgraduate work	30	58
Employment	Work full time	40	53
	Work part time	25	17
	Do not work	35	32
Household income	Less than \$50,000	20	31
	\$50,000-\$75,000	23	32
	\$75,000-\$100,000	16	26
	Greater than \$100,000	41	11
Marital status	Married	91	90
	Not married	9	10
Ethnicity	White	87	100
	Asian	8	0
	Other	5	0
Family size	One child	39	63
	Two children	41	37
	Three children	14	0

*The group sizes were 87 donors and 19 nondonor controls.

In terms of statistical methods, the data were entered into SPSS, percentages were computed for categorical variables, and means and standard deviations were computed for continuous variables. To test for relationships between amount of milk donated and other relevant items, the correlation coefficient was computed. To test hypotheses comparing donors who experienced problems versus donors who did not and comparing donors versus nondonors, *t* tests were computed. To test for relationships between donors and nondonors and type of pump and method of obtainment, the chi-square test was used.

Results

Demographic and Lifestyle Information

Demographic and lifestyle information about the samples of donors and nondonors is reported in Tables 1 and 2, respectively. Recall that this is a sample of milk donors, not mothers of premature infants. We did not collect information about the birthing process or the health of their babies.

Involvement With the Bank

Percentages of how donors heard about the milk bank, how long it took to contact the bank, and how long the screening process took are reported in Table 3. Note that

Table 2. Lifestyle Information About the Sample of Donors and Nondonors*

Item	Responses	Donors	Nondonors
Other donations	Blood or plasma	65	63
	Organ donors	71	95
Exercise	Once a week or less	11	26
	Twice a week	21	11
	Three times a week	28	21
	More often	28	26
Eat healthy food	Often	38	21
	Nearly always	42	32
	Always	6	5
Drink alcohol	Do not drink	28	21
	Once per month	38	42
	More often	20	22
Type of pump	Manual	13	16
	Battery	6	0
	Electric-personal	65	68
	Electric-hospital	13	11

*The group sizes were 87 donors and 19 nondonor controls.

Table 3. How Donors Got Involved With the Milk Bank*

Item	Responses	Donors (%)
How did you first hear about the milk bank?	Doctor or medical professional told you about it	14
	Friend told you about it	28
	Information at doctor's office	3
	Web site	17
	TV/radio announcement	5
How long was it between when you first heard about the bank and you contacted them?	Other	31
	A couple of months	26
	A couple of weeks	18
	About a week	10
	A couple of days	15
How long did it take to complete the screening process?	Right away	19
	About a month	15
	A couple of weeks	31
	About a week	19
	A couple of days	23

*The group size was 87 donors.

31% of participants responded *other* to how they heard about the bank. The most common responses were from lactation consultants, at child birth classes, and at the neonatal intensive care unit.

Reasons for Donating

The means ± standard deviations for the 4 highest scoring reasons for donating (*to help others, had too much milk and wanted to donate it, know the milk bank needs donations, and would hope someone would do the same if I were in need*) were 9.34 ± 1.34, 8.44 ± 2.56, 7.79 ± 2.74, and 7.61 ± 3.18, respectively. For the item, "Needed to pump milk to stimulate lactation," 19% of

Table 4. Means ± Standard Deviations for Volunteer Functions Inventory Motives*

Item	Donors	Nondonors
Values	8.84 ± 1.48	8.88 ± 1.19
Enhancement	6.64 ± 2.71	6.13 ± 2.75
Understanding	6.58 ± 2.57	7.42 ± 1.87
Social**	4.26 ± 2.31	5.64 ± 2.44
Protection	2.51 ± 2.73	3.40 ± 3.00
Career**	1.49 ± 2.31	4.53 ± 4.23

*The group sizes were 87 donors and 19 nondonor controls.

**P < .05 for the independent-groups *t* test comparing donors with nondonor controls.

respondents reported a value of 7 or higher, including 11 donors who reported a value of 10, and 59% reported a value of 0. The differences between high and low responders on this item are explored below in the section on amount of milk donated.

The VFI was also an assessment of reasons for donating. Recall that the VFI attempted to measure motives for donating or functions that donating served in one's life. The means (and standard deviations) for values, enhancement, understanding, social, protection, and career are reported in Table 4.

Problems While Breastfeeding and Pumping

Donors were asked about how breastfeeding was going and what problems they were experiencing. In terms of how it was going, 69% responded that it was "excellent" and an additional 20% replied "good." In terms of breastfeeding problems, 58% of donors reported having engorgement, 33% reported cracked or chapped nipples, and 20% reported breast infection or mastitis. Donors were also asked about problems their babies experienced; 13% reported having thrush, 6% reported having slow weight gain, and 25% reported having reflux.

The means and standard deviations for problems experienced while pumping are reported in Table 5. This table shows the data for the donors and nondonors and reports significance tests. Furthermore, Table 6 shows the percentages for what kind of pump was used and how the pump was obtained for both donors and nondonors. Using a chi-square test to compare donors to nondonors, no statistically significant differences were found for either kind of pump or method of obtainment.

Barriers to Donating Milk

The means and standard deviations for the items concerning barriers are reported in Table 7. This table shows the data for the donors and nondonors and reports significance tests.

Table 5. Means \pm Standard Deviations for Problems Pumping Milk*

Item	Donors	Nondonors
Pumping milk was hard to fit into my schedule	3.53 \pm 3.45	5.21 \pm 4.05
Pumping milk took a long time**	2.47 \pm 2.89	7.21 \pm 2.46
Pumping was harder than I had anticipated**	2.12 \pm 3.02	6.58 \pm 3.51
I didn't like dealing with the pump**	2.80 \pm 3.33	7.42 \pm 3.47
I didn't like cleaning the pump**	4.77 \pm 3.51	7.31 \pm 3.16
Using plastic containers to store milk was inconvenient	3.10 \pm 4.25	3.55 \pm 3.94
Pumping was uncomfortable**	1.93 \pm 2.50	6.10 \pm 3.26
Pumping was tiring**	2.43 \pm 2.85	5.52 \pm 3.67
It was a struggle to pump extra milk to donate	3.34 \pm 3.82	—
When it was time to stop pumping, I was glad to stop**	5.80 \pm 4.02	9.05 \pm 2.81
My contributions to the Milk Bank were not appreciated	0.60 \pm 2.09	—

*The group sizes were 60 donors and 19 nondonor controls. Dashes indicate the item was not relevant to the control group.

** $P < .01$ for the independent-groups t test comparing donors to nondonor controls.

Table 6. Kinds of Pumps and How They Were Obtained*

Item	Donors (%)	Nondonors (%)
Manual pump	13	15
Battery-operated pump	6	0
Electric personal grade	66	68
Electric hospital grade	11	11
Rented	4	11
Purchased	72	58
Rented and purchased	11	0
Borrowed	5	11
Receive as gift or favor	7	16

*The group sizes were 83 donors and 18 nondonor controls. A chi-square test showed no statistically significant differences between donors and nondonors for either kind of pump or method of obtainment.

Positive and Negative Affect

To score the PANAS, the 5 positive adjectives were averaged together and the 5 negative adjectives were averaged together (Cronbach's alpha = .88, .67, respectively). The resulting means \pm standard deviations were 6.91 \pm 2.22 and 0.56 \pm 1.03, respectively. Donors were asked if they would donate again if given the opportunity, and 97% said they would donate again.

Values

The means (and standard deviations) for values are reported in Table 8. There were no statistically significant differences between donors and nondonors.

Table 7. Means \pm Standard Deviations for Barriers to Donating Milk*

Item	Donors	Nondonors
Finding time to pump milk	3.68 \pm 3.05	4.62 \pm 2.87
Finding a place to pump milk	1.31 \pm 2.11	1.81 \pm 2.71
Physical stress from pumping**	1.80 \pm 2.45	3.68 \pm 2.60
Freezing or storing milk	2.31 \pm 2.66	1.06 \pm 1.43
Transporting milk to the bank	3.28 \pm 2.89	—
Health tests and screening	2.15 \pm 2.22	—
Psychological stress**	0.48 \pm 1.31	3.25 \pm 3.11
Depression**	0.26 \pm 1.26	1.87 \pm 3.04
Communicating with staff	0.21 \pm 0.77	—
Personal illness	1.41 \pm 2.28	1.75 \pm 2.93
Illness of a family member	0.71 \pm 1.64	0.63 \pm 2.50
Problem getting blood test	3.04 \pm 3.32	—

*The group sizes were 60 donors and 19 nondonor controls. Dashes indicate the item was not relevant to the control group.

** $P < .01$ for the independent-groups t test comparing donors to nondonor controls.

Table 8. Means \pm Standard Deviations for Values*

Item	Donors	Nondonors
Security	8.78 \pm 1.62	8.67 \pm 1.33
Tolerance	8.50 \pm 1.52	8.06 \pm 1.35
Self-direction	8.46 \pm 1.84	8.44 \pm 1.42
Social concern	7.47 \pm 1.84	7.44 \pm 1.29
Spirituality	7.33 \pm 2.93	7.39 \pm 3.48
Pleasure seeking	7.10 \pm 2.03	7.61 \pm 1.82
Achievement	6.75 \pm 2.10	6.78 \pm 1.70
Tradition	6.64 \pm 2.66	5.89 \pm 1.94
Power	2.78 \pm 2.31	3.78 \pm 2.32

*The group sizes were 84 donors and 18 nondonor controls. An independent-groups t test comparing donors with nondonors showed no differences on any values.

Amount of Milk Donated

One of the secondary objectives of the study was to determine the relationship between the donation experience and the amount of milk donated. The milk bank staff provided the amount donated for each participant. Therefore, this information was an objective measurement that was not reported by the donors or included in the interview. For the amount of milk donated, 2 donors gave very large amounts (211 and 363 liters; these values were double-checked with milk bank records to be sure that there was not a data recording error). Not including these 2 data points, the mean \pm standard deviation amount of milk donated was 29.65 liters \pm 31.13. These 2 extreme values were statistical outliers in that they were 6 and 10 standard deviations greater than the mean. No clear consensus on how to analyze data with outliers has emerged

in the literature, but it seems clear that if the data points are not due to identifiable artifacts (eg, recording, transcription, or instrumentation errors), then dropping the points is not appropriate.^{10(p17,18)} These 2 values were changed to 148 liters so that they would not be overly influential in the analyses (4 other donors gave between 133 and 148 liters; this treatment of outliers is commonly called Winsorizing). The data were not normally distributed; the cut-points for the 25th, 50th, and 75th percentiles were 6.65, 18.10, and 36.96 liters, respectively.

Problems when breastfeeding were assessed using yes-no questions. Donors' responses served as the grouping or independent variable in a *t* test, and the amount donated served as the dependent variable. With the exception of thrush, there were no statistical differences in amount donated between those who reported having the problem versus those who did not report having the problem. For thrush, the 13 women who reported that their babies had thrush donated an average of 54.02 liters, whereas the 72 women who reported no such problem donated an average of 28.65 liters. Note that this relationship is in the opposite direction than hypothesized. (Recall that this item merely asked if the babies had had thrush. No attempt was made to determine how the occurrence of thrush affected the donation process; the Human Milk Bank Association of North America [HMBANA] guidelines⁴ prohibit donation during times of such infections.)

Along these lines, we hypothesized that the greater the barriers or problems, the less a person is likely to donate. This hypothesis was not supported. Of the 12 barriers and 11 problems that we asked about, none of them had statistically significant negative correlations with donation amount. (The problems are listed in Table 5, and the barriers are listed in Table 7.)

Regarding the reasons for donating milk, only 2 items were significantly correlated with amount of milk donated, namely, "Had too much milk and wanted to donate it" ($r = .31, P < .01$) and "Needed to pump milk to stimulate lactation" ($r = .34, P < .01$). There was a clear dichotomy of donors on this latter item. This dichotomy was explored by comparing the 17 donors who responded 7 or above on this item with the 50 donors who responded 0. The mean donation amount \pm standard deviations for these 2 groups were 48.67 liters \pm 46.96 and 23.01 liters \pm 24.54, respectively ($t[66] = 2.91, P < .01$).

In terms of lifestyle and demographic information, only 1 item was related to donation amount. There was a significant negative relationship between age and donation amount such that younger donors donated more milk ($r = -.24, P < .03$).

Comparisons to Nondonors

A group of 19 women who had pumped milk and breastfed their children served as a nondonor comparison group to the 87 donors. These nondonors were asked to describe their milk supplies using a 4-point scale; 26% of nondonors reported "not enough for baby's needs," 47% reported "just enough to meet baby's needs," and 21% reported "somewhat more than enough to meet baby's needs."

There were no statistically significant differences between the donors and nondonors in the reported rates of breastfeeding problems (engorgement, cracked or chapped nipples, mastitis, thrush, slow weight gain, or reflux) or lifestyle choices (except that donors reported eating healthy food more frequently than nondonors).

Donors reported more positive breastfeeding experiences in comparison to the nondonors in 3 areas. First, recall that 69% of donors reported that breastfeeding was "excellent" and another 20% said "good." For nondonors, only 47% said "excellent," and 37% said "good." When analyzed using the report of breastfeeding as a continuous variable on a 4-point scale, these differences were statistically significant ($t[98] = 2.40, P = .02$). Second, when asked about problems while pumping and barriers to donating milk, nondonors reported more problems (all but 2 problems were statistically different) and barriers (physical stress, psychological stress, and depression) than donors. These data are shown in Tables 5 and 7. Third, the PANAS was used to assess emotions or feelings.⁸ A necessary difference was made in the instructions to this scale. Donors were asked to rate their emotions about *donating milk*, whereas nondonors were asked to rate their emotions about *breastfeeding*. Donors ($\bar{x} = 6.91, SD = 2.22$) reported greater positive affect than nondonors ($\bar{x} = 5.67, SD = 2.54; t[103] = 2.14, P = .04$), and donors ($\bar{x} = 0.57, SD = 1.04$) reported less negative affect than nondonors ($\bar{x} = 2.72, SD = 2.03; t[103] = 6.70, P < .001$). These results were not directly comparable because the instructions were different; however, the data indicated that donating milk was a more positive and a less negative emotional experience than simply breastfeeding.

Discussion

Characterization of Donors

Most of the donors are married, young, financially secure, well-educated, and healthy. Their reasons for donating have strong altruistic and benevolent themes. They report relatively few barriers to donating and few problems while pumping. They experience positive

emotions while donating milk, and they would donate again if the opportunity arises. Donors report more positive emotions about donating to the milk bank than nondonors report about volunteering in general.

Low Levels of Problems and Barriers

Recall that 58% of donors report having engorgement, 33% report cracked or chapped nipples, and 20% report breast infection or mastitis. Furthermore, there were no statistically significant differences between donors and nondonors for the occurrences of these problems. Thus, donors do not experience these problems at greater or lesser rates than the nondonors reported. However, these rates of problems are much higher than those reported by Azema and Callahan in their study from France (19%, 10%, and 2%, respectively).⁶ Although we cannot account for these differences, other research has provided more support for the findings of the current project.¹¹⁻¹⁴

In addition to replicating the methodology of Azema and Callahan,⁶ we also asked 11 items about problems with the pumping process. For 9 of these items, the means were less than a moderate value of 4.00 on an 11-point scale. Similarly, with regard to barriers to donating milk, on an 11-point scale, no items had means that exceeded 4.00. These data suggest that the process of pumping is not particularly troublesome or problematic for donors.

Strategies for Recruiting New Donors

There is no one dominant mechanism by which donors report learning of the milk bank. Thus, when considering how to recruit new donors, milk banks should focus on a multipronged approach. Most surely, one of these prongs should be word of mouth. The most commonly reported method of hearing about the milk bank was hearing about it from a friend. The fact that 97% of donors say that they would donate again is a very strong statement of the meaningfulness of the experience. Involving former donors in the recruitment process is likely to be an effective method for recruiting new donors.

When designing recruiting materials, the fact that most donors are motivated by altruistic and benevolent reasons should be kept in mind. Donating milk is seen most frequently as an outlet for expressing one's personal values, and the values that donors endorse are security, tolerance, self-direction, and social concern.

Strategies for Increasing Donation Amounts

It is interesting to note that there are few relationships between problems and donation amounts. Problems

during breastfeeding do not account for why some women only make moderate donations and others make large donations. Furthermore, in this sample, there are no meaningful correlations between donation amount and barriers, pumping problems, reasons for donations, or lifestyles. As such, this study does not successfully identify factors that could be addressed to increase donation amounts.

A small group of donors report that they had to pump milk to stimulate lactation. This group donates significantly more milk than donors who do not need to stimulate lactation. Targeting these women in recruiting efforts might prove fruitful. We did not anticipate the existence of such a distinct subsample and did not ask questions to explore the differences between women who needed to stimulate lactation versus those who did not.

Rempel found that perceived approval from partners, friends, and mothers was significantly correlated with intentions to continue breastfeeding infants.¹⁵ Women who perceived that people around them were supportive of breastfeeding were more likely to report that they intended to continue breastfeeding after 9 months. Although Rempel did not survey breast milk donors, it is interesting to note the strong relationship social support plays in decisions to extend breastfeeding (although this relationship may not be causal). Furthermore, Wagner et al found that breastfeeding mothers differed significantly than formula-feeding mothers on 3 personality dimensions.¹⁶ The most relevant of those dimensions was extraversion; breastfeeding mothers were more extraverted than formula-feeding mothers. We can extend these findings by inferring that donors who are in environments where they are socially engaged, supported, and accepted are more likely to donate larger volumes of milk.

Limitations

The primary limitations of the current study concern the sample. The participants were self-selected and could exclude themselves at 2 points. First, participants had to return the consent form to the milk bank before an interview could be scheduled; the return rate for the consent form was 35%. And second, participants had to agree to be interviewed when they were telephoned by the researcher; the participation rate was 76% of those who returned the consent form. It is quite possible that those people who chose to participate were systematically different from those people who did not participate; a more powerful random sampling technique would be needed to quantify these differences.

Furthermore, although the sample size was the same order of magnitude as Azema and Callahan,⁶ it was still a relatively small sample for survey research. There may also have been a regional bias in that all the participants lived in Texas when they donated.

Finally, the donors had all donated within the past 3 years. However, we did not measure how long ago they had donated. And we did not ask the nondonor sample how long ago they breastfed. The time lapse between the donating and breastfeeding experience and the interview allows for error in the data. The accuracies of the recall of women may vary with the length of time since they lactated.

Suggestions for Future Research

An important population to examine in future research is those women who intend to donate but do not follow through on their intention. Being able to compare these “intenders” with those who actually donate might provide some insight into what barriers and problems exist in the donation process. The population of intenders is able to provide this insight better than merely a control group of women who breastfeed their children but never have any intention of donating excess milk.

This study mainly focuses on the psychological experiences of donors. Although we ask several items about health problems, it is likely that physiological experiences govern the donation process much more than psychological experiences. That is, only women who can produce excess milk are viable donors. To understand what makes these women physically able to be donors would help target recruiting efforts and increase amounts of milk donated.

In conclusion, we have provided an objective and comprehensive characterization of breast milk donors in terms of their demographics, lifestyles, affective experiences, and personal values. Furthermore, we have documented the process by which they got involved with the milk bank and the problems and barriers that they experienced. This information should be useful for both recruiting new donors and for enhancing the donation experience.

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Resumen

El principal objetivo de esta investigación fue de crear una caracterización detallada de los bancos de leche, incluyendo información descriptiva sobre la demografía y el estilo de vida, involucramiento con el banco de leche, razones para donar, problemas durante la lactancia y extracción de leche, barreras para donar leche, experiencias efectivas, y valores personales. Se tomaron datos a través de entrevistas telefónicas con 87 donantes y 19 no-donantes controles. Se encontró muy poca relación entre la información descriptiva y la cantidad de leche donada. Las donantes reportaron pocos problemas con la extracción de leche comparado con las no-donantes. Se presentan estrategias para reclutar nuevas donantes y estrategias para aumentar la cantidad de donaciones.