

## THE CORRELATION AMONG HUMAN MILK DONOR, BOTTLE FEEDING, AND BREASTFEEDING STATUS OF MOTHER OF 0-6 MONTHS INFANTS IN YOGYAKARTA, INDONESIA

*Status Donor ASI, Penggunaan Dot, dan Menyusui pada Ibu Bayi Usia 0-6 Bulan di Daerah Istimewa Yogyakarta, Indonesia*

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### ABSTRACT

**Background:** Human milk donor (HMD) works as temporary support before the mother could breastfeed independently and meet the exclusive breastfeeding (EBF) status on their own. However, caregivers commonly use bottle feeding to give breast milk substitutes for the baby. although it might increase the risk of nipple confusion and disturb the breastfeeding (BF) process. **Objectives:** this research aimed to explore the relationship between HMD, bottle-feeding, and the BF status of the mother of infants aged 0-6 months in Daerah Istimewa Yogyakarta (DIY). **Methods:** This is a cross-sectional research using online questionnaires with the link available in social media for four months (December 2020-March 2021), with a total participant number of 123. Data were analyzed using the Kolmogorov-Smirnov and chi-square test. **Results:** There was no significant correlation between HMD-recipient status and EBF ( $p=0.080$ ). However, it has a significant relationship with prolonged BF insufficiency ( $p=0.000$ ;  $RR=3.214$ ;  $CI=1.020-4.082$ ). The bottle-feeding utilization was signified as a risk factor for both non-EBF ( $p=0.020$ ;  $RR=2.524$ ;  $CI=1.090-5.844$ ) and prolonged BF insufficiency ( $p=0.021$ ;  $RR=2.103$ ;  $CI=1.073-4.123$ ). **Conclusion** An approach to use appropriate feeding media through lactation support for the mothers is essential, particularly in HMD practices.

**Keywords:** Human milk donor, exclusive breastfeeding, breastfeeding self-sufficiency, bottle feeding

### ABSTRAK

**Latar Belakang:** Donor Air Susu Ibu (ASI) merupakan salah satu alternatif sementara sebelum ibu dapat menyusui dan mencapai status ASI Eksklusif secara mandiri. Namun demikian, dot merupakan media yang sering digunakan oleh pengasuh untuk memberi makan bayi meskipun hal ini dapat meningkatkan resiko bingung puting dan mengganggu proses menyusui. **Tujuan:** Penelitian ini bertujuan untuk mengetahui hubungan antara Donor ASI, penggunaan dot, dan status menyusui Ibu dari bayi berusia 0-6 bulan di DIY **Metode:** Penelitian ini merupakan studi *cross sectional* yang menggunakan kuesioner online dengan *link* yang tersedia di sosial media selama 4 bulan (Desember 2020- Maret 2021). Jumlah total responden 123 orang. Data diolah menggunakan uji statistik *Kolmogorov-smirnov* dan *chi square*. **Hasil:** Hasil penelitian menunjukkan bahwa tidak ada hubungan yang signifikan antara Donor ASI dan ASI Eksklusif ( $p=008$ ) namun Donor ASI memiliki hubungan dengan keberlanjutan ketidakcukupan ASI ( $p=0.000$ ;  $RR=3.214$ ;  $CI=1.020-4.082$ ). Penggunaan dot memiliki hubungan yang signifikan baik pada status tidak ASI Eksklusif ( $p=0.020$ ;  $RR=2.524$ ;  $CI=1.090-5.844$ ) dan keberlanjutan ketidakcukupan ASI ( $p=0.021$ ;  $RR=2.103$ ;  $CI=1.073-4.123$ ). **Kesimpulan:** Perlu adanya upaya untuk mengedukasi penggunaan media yang tepat untuk pemberian makan bayi melalui proses dukungan menyusui bagi ibu, terutama pada praktik Donor ASI.

**Kata kunci:** Donor ASI, ASI Eksklusif, Kecukupan ASI, Penggunaan Dot

## INTRODUCTION

Based on WHO's recommendation, each baby should be breastfed exclusively in the first six months. If the mother is unreachd or the mother-own-milk (MOM) is insufficient, infants still could meet the exclusive breastfeeding status by receiving a human milk donor from other women, especially for the low-birth-weight infants (Tran, Nguyen and Mathisen, 2020). Besides its safety issues, the utilization of bottles may lead to nipple confusion that interrupts the breastfeeding process later (Vu Hoang *et al.*, (2020) & Buccini *et al.*,(2017)). Caregivers commonly use bottle feeding to give breast milk substitutes for the baby. This method may result in the baby's breastfeeding refusal due to the confusion between the two media used (Kebebe and Assaye, 2017).

Based on the purpose, human milk donors are aimed to give a temporary support when mother-own-milk was insufficient or the mother is unreachable. These milk-supply challenges commonly take place in the first few days after the baby's birth.(Chang *et al.*, (2013) & Johnson and Economides (2019)). Furthermore, the lactation support system must be addressed to prioritize MOM, promote maternal lactation, and prevent the overuse of Donor Human Milk (DHM). For babies who need long-term support due to maternal separation, illness, or death, DHM might be the option in western society (Brandstetter *et al.*, 2018). However, in Muslim society, the options available might be through donated expressed breast milk or wet-nursing from a foster mother due to the specific consideration of the concept of "Mahram" or brotherhood based on breast milk sharing from the same mother (Weaver *et al.*, (2019)&Hsu *et al.*, (2012)).

Breastfeeding problems generally contribute to early cessation of breastfeeding, including a mother's perception of insufficient milk supply (PIMS). This condition is defined as "A mother believes she is not producing enough breast milk for her infant's satisfaction or weight gain" (Kent *et al.*, 2021). In addition, this problem has a huge role as the main factor affecting a mother's decision to look for milk donors.

Based on the annual report of The Provincial Health Office of DIY, the total rate of exclusive breastfeeding (EB) for infants aged below six months in DIY passed the expected target. However, there are still many babies who

do not pass the full-term of 6 months EB. It is showed on its rate in infants aged five months 29 days group (Dinas Kesehatan DIY, 2020).

Moreover, research and data about human milk donors in Indonesia and DIY are still limited. There were insufficient findings of the relation between human milk donors, bottle feeding, and breastfeeding status. These points highlighted the importance of this research's aims to explore the relationship between HMD, bottle-feeding, and the BF status of the mother of infants aged 0-6 months in Daerah Istimewa Yogyakarta (DIY). Furthermore, this research finding will be beneficial to strengthen the policy and practical lactation support related to human milk donor usage.

## METHOD

The research was a cross-sectional, observational research conducted in *Daerah Istimewa Yogyakarta (DIY)*, Indonesia. The participants were recruited using purposive sampling technique. An online structured questionnaire was developed by using Google forms, with a consent appended to it. We posted the research announcement and the questionnaire link on several social media such as WhatsApp groups, Facebook, and Instagram. The participants were encouraged to roll out the survey to as many people as possible. The questions consist of the mother's human milk donors, bottle feeding, and the breastfeeding status.

The research was approved by the Research Ethics Committee, Universitas Ahmad Dahlan with approval number of 012101006. Only participants who have internet access could participate in the research. The inclusion criteria were: mothers of children aged 0-6 months and live in DIY. The data collection was started in December 2020 and closed on March 2021, and we able to collect data from various districts in DIY. Data were analyzed using chi-square test.

## RESULT

### Characteristics of research participants

In total, 154 Mothers participated in this research. Further, we excluded 31 participants who had incomplete data because of lost contact, and only 123 participants left in this research (Table 1). Most of the mothers aged 19-40 years (97,5%), graduated from diploma and bachelor level (60,9%), work as a housewife (56,9%), and live in Sleman (36,6%).

The majority of the subjects have a baby aged 3-6 months during the data collection. The bottle-feeding utilization was high in both groups by 68% in the donor-recipient group and 55% in the non-recipient group (Fig 1.).

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### Human milk donor, bottle feeding, and breastfeeding status

The results showed no significant correlation between human milk donor-recipient status and exclusive breastfeeding (p=0.080).

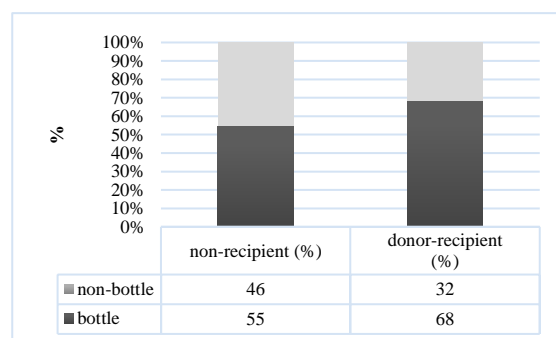


Fig 1. Bottle Feeding Utilization in Each Group

In contrast, it has a significant relationship with prolonged breastfeeding insufficiency (p=0.000, RR=3.214, CI= 1.020-4.082). The bottle-feeding utilization signified as a risk factor for both non-exclusive breastfeeding (p=0.020, RR=2.524, CI=1.090-5.844) and prolonged breastfeeding insufficiency (p=0.021, RR=2.103, CI= 1.073-4.123) (Table 2.).

Table 1. Socio-demographic Characteristics of Research Participants

No	Variables	n (%)	Donor Milk Recipient		Sig	Exclusive Breastfeeding		Sig	Breastfeeding Insufficiency		Sig	Bottle feeding		Sig
			Yes	No		Yes	No		Yes	No		Yes	No	
1.	Mother's age													
	a. < 19 years	1 (0,81%)	1	0		0	1		1	0		0	1	
	b. 19-40years	120 (97,5%)	21	99	1,00	95	25	1,00	33	87	1,00	69	51	1,00
	c. >40 years	2 (1,62%)	0	2		2	0		0	2		1	1	
2.	Mother's education													
	a. Elementary-Junior High School	3 (2,4%)	0	3		3	0		0	3		0	3	
	b. Senior High School	28 (22,8%)	6	22	1,00	21	7	1,00	9	19	1,00	15	13	0,97
	c. Diploma & Bachelor	75 (60,9%)	12	63		60	15		19	56		44	31	
	d. Postgraduate	17 (13,8%)	4	13		13	4		6	11		11	6	

Continuation

No	Variables	n (%)	Donor Milk Recipient		Sig	Exclusive Breastfeeding		Sig	Breastfeeding Insufficiency		Sig	Bottle feeding		Sig
			Yes	No		Yes	No		Yes	No		Yes	No	
3.	Mother's Occupation													
	a. Housewife	70 (56,9%)	12	58		57	13		18	52		34	36	
	b. Civil servants / Private Employee	28 (22,8%)	4	24		22	6		7	21		17	11	0,20
	c. Private employee with shift	12 (9,8%)	1	11	0,82	9	3	0,99	3	9	0,97	10	2	
	d. Farmer/ Entrepreneur	12 (9,8%)	5	7		9	3		5	7		8	4	
	e. Freelance	1 (0,81%)	0	1		0	1		1	0		1	0	
4.	Child's age													
	a. 0-1 month	13 (10,5%)	3	10		10	3		4	9		9	4	
	b. 1-3 months	42 (34,1%)	7	35	1,00	35	7	1,00	11	31	1,00	23	19	1,00
	c. 3-6 months	68 (55,3%)	12	56		52	16		19	49		38	30	
5.	Residential area													
	a. Yogyakarta	29 (23,6%)	9	20		21	8		10	19		16	13	
	b. Sleman	45 (36,6%)	8	37		34	11		13	32		25	20	
	c. Bantul	42 (34,1%)	5	37	0,39	35	7	0,64	10	32	0,95	26	16	1,00
	d. Kulon Progo	4 (3,25%)	0	4		4	0		1	3		2	2	
	e. Gunung Kidul	3 (2,43%)	0	3		3	0		0	3		1	2	

(\*) Significant (p<0,05)

Table 2. Human milk donor, bottle feeding, and breastfeeding status

No.	Variables	n (%)	Exclusive Breastfeeding		Sig	RR (CI)	Breastfeeding Insufficiency		Sig	RR (CI)
			Yes	No			Yes	No		
1.	Donor milk recipients									
	Yes	22 (17,8%)	14	8	0,80	2.040	14	8	0,00	3.214
	No	101 (82,2%)	83	18		(1.020-4.082)	20	81		(1.942-5.319)
2.	Bottle feeding									
	Yes	70 (56,9%)	50	20	0,02	2.524	25	45	0,02	2.103
	No	53 (43,1%)	47	6	*	(1.090-5.844)	9	44	1*	(1.073-4.123)

(\*) Significant (p<0,05)

## DISCUSSION

WHO defined exclusive breastfeeding as "The infants receive only breast milk. They do not receive other liquids or solids, not even water, except for oral rehydration solution, or drops/syrups of vitamins, minerals, or medicine." It was given in the baby's first six months of life and played a role as the best nutrition for them in this period (Binns *et al.*, 2020). Further, the rising knowledge and awareness of its benefit and the risk of formula feeding lead to an increase in the usage of human donor milk if the MOM is insufficient or the mother is unreachable (Tran, Nguyen, and Mathisen (2020) & Perinatal Services BC (2016)).

One of the human milk donors aims to meet the exclusive breastfeeding (EBF) status. Conversely, the result of this research found that is no significant correlation between human milk donors recipients and exclusive breastfeeding. In addition, the usage of donor milk has a significant correlation to prolonged breastfeeding insufficiency. This finding strengthens the statement that during the milk sharing process, the lactation support system must be addressed to prioritize MOM, promote maternal lactation, and prevent the overuse of DHM (Brandstetter *et al.*, 2018). This research found that only 11 (44%) participants in the donor milk recipient group got lactation counseling during the process. As the perceived low milk supply works as a factor of breastfeeding cessation (Chang *et al.*, 2019), the educational intervention targeting the mother's self-efficacy may reduce the perception of breastfeeding insufficiency and further increase the higher odds of exclusive breastfeeding (Sandhi *et al.*, 2020).

Furthermore, the bottle-feeding utilization was high in both groups by 68% in the donor-recipient group and 54% in the non-recipient group. This factor is related to both non-exclusive breastfeeding and prolonged breastfeeding insufficiency. Similarly, a systematic review found an association between pacifier use and breastfeeding interruption. This may happen through two pathways: pacifier introduction leading to breastfeeding interruption related to nipple confusion, or the breastfeeding interruption as a cause of the pacifier usage. The pacifier utilization itself showed the mother's decreased motivation or difficulties breastfeeding their child (Buccini *et al.*, 2017). Another systematic review also

stated that avoiding bottles increases the extent and duration of breastfeeding (Collins *et al.*, 2016).

Nipple confusion was defined as an infant's difficulty achieving an effective latch and sucking because of the bottles or artificial nipples exposure (Al-Sahab *et al.*, 2010). This condition may lead to insufficient milk removal from the breast and gradually decrease breast milk production (The Royal Women's Hospital, 2020). Further, in the context of the mothers who look for the donor because of the perception of insufficient breast milk, the bottle utilization may lead to lower breast milk supply or even the cessation of breastfeeding. WHO recommends that proper guidance and counseling is needed to make informed decision making in feeding bottles, teats, and pacifiers avoidance until the successful establishment of breastfeeding (WHO, 2017).

This research results underline the importance of understanding that appropriate feeding media should deliver the usage of DHM as a temporary feeding for infants to avoid contrary effects such as breastfeeding difficulties or prolonged breastfeeding insufficiency. Besides that, lactation support during the milk sharing process is also essential for achieving EBF. Lactation counseling provides technical information and practical support of breastfeeding, for example, advice to ensure effective breastfeeding (McFadden *et al.*, 2019). The effectiveness of breastfeeding consists of proper positioning and attachment (latch) and effective suckling to transfer milk (Tiruye *et al.*, 2018). This support may reduce the mother's feeling of insufficient breastfeeding, increase the mother's self-efficacy, and help mothers find appropriate media instead of bottle feeding.

### Research limitation

The limitation of this research was that only participants who had internet access could participate in this research. The result might be different if it is conducted through a direct offline survey.

## CONCLUSION

There was no significant correlation between HMD-recipient status and Exclusive Breastfeeding. However, it works as a risk factor of prolonged breastfeeding insufficiency along with bottle-feeding usage. Further, it may disturb the breastfeeding process and obstruct

its exclusivity. In the context of DHM, the caregivers should avoid bottle-feeding utilization.

## SUGGESTIONS

An approach to the mothers to use appropriate feeding media through lactation support and education is essential, particularly in human milk donor practices. These points aimed to avoid bottle-feeding usage, ensuring the mother breastfeeding self-sufficiency, and also its exclusivity during the milk donor period and beyond.

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