

Original Research Article

Effects of probiotics on stool frequency in term newborns

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ABSTRACT

Background: Probiotics are live micro-organisms, which if given in the right doses, can be beneficial to their host. They are known for their ability to promote the growth of other micro-organisms and to increase the activity of bacteria in the intestinal microflora. Supplementing infants with probiotics was shown to regulate gastrointestinal motility. They can stimulate intestinal peristalsis, which promotes elimination of bilirubin. Probiotics have been shown to increase intestinal transit time.

Methods: This study was conducted in Shri Guru Ram Das Institute of Health Sciences and Research involving 150 term healthy newborns. They were divided into two groups. Group 1 was given probiotics with 10ml distilled water and group 2 was given only 10ml distilled water from 1st to 3rd day of life. Total number of stools passed in a day were recorded from 1st to 7th day of life in both the groups.

Results: The mean frequency of stools were 3.76 ± 1.08 , 3.72 ± 0.95 , 4.02 ± 0.92 in group 1 whereas the mean frequency of stools were 3.31 ± 1.10 , 3.39 ± 0.98 , 3.45 ± 0.99 on 1st, 2nd, 3rd day of life respectively.

Conclusions: Statistically significant increase in frequency of stools were observed in group 1 (probiotic group) than group 2 (only distilled water group) on 1st to 3rd day of life.

Keywords: Probiotics, Peristalsis, Stool

INTRODUCTION

Probiotics are also defined as “live microorganisms which when administered in adequate amounts confer a health benefit on the host.” Gut microbiota promotes healthy effects on the host and prevents diseases. Probiotics have been shown to increase intestinal transit time.¹ A present study was conducted in Shri Guru Ram Das Institute of Health Sciences and Research to evaluate the effects of probiotics on stool frequency in 150 term newborn.

METHODS

A Randomised Controlled study was conducted from January 1, 2018 to June 30, 2018 in the Department of Paediatrics of Sri Guru Ram Das Institute of Medical

Sciences and Research, Sri Amritsar to evaluate the effect of probiotics on stool frequency in 150 term newborn babies.

Inclusion criteria

- Term inborn neonates
- Haemodynamically stable neonates

Exclusion criteria

- Neonates with h/o birth asphyxia
- Neonates with G6PD deficiency
- Neonates with congenital malformations
- Neonates with probable or clinical sepsis
- Neonates with ABO incompatibility and/or Rh incompatibility

- Neonates with respiratory distress syndrome
- Infants of diabetic mother
- Neonates with cephalhaematoma
- Neonates with conjugated hyperbilirubinemia

Baby’s details like name, hospital number, sex, date, birth weight and number of stools passes per day were collected as per decided proforma.

A total of 150 term healthy haemodynamically stable neonates (Gestational age >37 weeks) were enrolled in the study after taking written informed consent from the patients. They were divided into 2 groups by Randomisation number generation by SPSS version 17.

Group 1 was given sample A (probiotics along with 10 ml of distilled water) from 1st day of life to 3rd day of life, one sachet per day. Probiotic (Darolac) sachets was used in this study. A sachet of 1g containing 1.25 billion cells (*Saccharom boulardii*, *Lactobacillus rhamnosus*, *Lactobacillus acidophilus* and *Bifidobacterium longum*) was used. Group 2 was given sample B (only 10ml of distilled water) from 1st day to 3rd day of life, once a day. Follow up was done from 1st to 7th day.

Number of stools passed per day were noted. It was single blinded study. Observations were done by one of the colleague. The data from the present study was systematically collected, compiled and statistically analysed to draw relevant conclusions. Data was analysed by using paired ‘t’ test. The p-value was determined. The level of <0.05 was considered significant. The results were then analysed and compared to previous studies. SPSS-22 version of software was used, released 2013, Armonk, NY: IBM Corp.

RESULTS

In group 1, 21 (28%) newborns were born to mothers belonging to age group of 20-25 years, 35 (46.67%) were born to mothers with age group of 26-30 years and 19 (25.33%) were born to mothers with age group above 30 years.

The mean maternal age group was 27.75±3.76 years. In group 2, 18 (24%) newborns were born to mothers belonging to age group of 20-25 years, 47 (62.67%) were born to mothers with age group 26-30 years and 10 (13.33%) were born to mothers with age group above 30 years. The mean maternal age was 27.48±2.98 year.

Table 1: Sex distribution of newborns.

Sex distribution of new-borns	Group			
	1		2	
	No.	%age	No.	%age
Male	39	52.00	39	52.00
Female	36	48.00	36	48.00
Total	75	100.00	75	100.00

Out of 75 newborns in both group 1 and in group 2, 39 (52%) were males and 36 (48%) were females as shown in Table 1.

The mean birth weight was 2880±260 grams in group 1. The mean birth weight was 2870±250 grams in group 2.

Out of 75 newborns, 54 (72%) were born to primigravida and 21 (28.00%) were born to multigravida in group 1. Out of 75 newborns, 52 (69.33%) were born to primigravida and 23 (30.67%) were born to multigravida in group 2 as shown in Table 2.

Table 2: Gravidity of mothers of newborns.

Gravidity of mothers of newborns	Group			
	1		2	
	No.	%age	No.	%age
Primigravida	54	72.00	52	69.33
Multigravida	21	28.00	23	30.67
Total	75	100.00	75	100.00

Out of 75 newborns, 47 (62.67%) were born via NVD, 1 (1.33%) via forceps, 27 (36%) via LSCS in group 1. Out of 75 newborns, 39 (52%) were born via NVD, 1 (1.33%) via forceps, 35 (46.67%) via LSCS in group 2 as shown in Table 3.

Table 3: Distribution of newborns according to mode of delivery.

Mode of delivery of new-borns	Group			
	1		2	
	No.	%age	No.	%age
Normal Vaginal Delivery (NVD)	47	62.67	39	52.00
Forceps	1	1.33	1	1.33
LSCS	27	36.00	35	46.67
Total	75	100.00	75	100.00

Number of stool frequency in term newborns is shown as below in Table 4.

Table 4: Effect of probiotics on stool frequency.

Day of Life	Stools per day				
	Group 1		Group 2		p-value
	Mean	SD	Mean	SD	
Day 1	3.76	1.08	3.31	1.10	0.013**
Day 2	3.72	0.95	3.39	0.98	0.037**
Day 3	4.02	0.92	3.45	0.99	0.001**
Day 4	4.03	0.98	3.72	0.98	0.060*
Day 5	4.09	1.04	3.77	1.03	0.060*
Day 6	4.01	0.93	3.88	0.90	0.376*
Day 7	3.85	1.02	3.75	1.00	0.520*

The mean frequency of stools were 3.76±1.08, 3.72±0.95, 4.02±0.92, 4.03±0.98, 4.09±1.04, 4.01±0.93 and

3.85±1.02 on 1st, 2nd, 3rd, 4th, 5th, 6th and 7th day of life respectively in group 1. The mean frequency of stools were 3.31±1.10, 3.39±0.98, 3.45±0.99, 3.72±0.98, 3.77±1.03, 3.88±0.90 and 3.75±1.00 on 1st, 2nd, 3rd, 4th, 5th, 6th and 7th day of life respectively in group 2. Statistically significant increase in frequency of stools were observed in group 1 (probiotic group) than group 2 (distilled water group) on 1st to 3rd day of life as shown in Table 4.

A large number of participants answered 14 injections 46 (31.9%) followed by 7 injections 22 (15.2%), 5 injections 28 (19.4%). Similarly, about the site of administration for the vaccine to be given was abdomen 91 (65.9%), buttocks 22 (15.9%), shoulder 18 (13.04%), thigh 2 (1.4%), don't know 5 (3.6%).

DISCUSSION

The mean maternal age group of newborns was in both the groups were 26-30 years. In a study done by Mehmet Mutlu² et al at Turkey, the mean maternal age in probiotic group was 28.5±5.6 (17-42) years and in control group the mean maternal age was 29.3±5.3 (18-41) years.² Out of 75 newborns in both group 1 and in group 2, 39 (52%) were males and 36 (48%) were females as shown in Table 1. In study by Torkman et al, in probiotic group 17 (37.75) were males and in control group 23 (48.95) were males.³ In study done by Mehmet Mutlu et al, in first group, the number of males were 40 (53.3%) and females were 35 (47.7%). In second group, the number of males were 44 (58.7%) and females were 31 (42.3%).²

In study done by V. Suganthi et al, Out of 95 controls, 51 (54%) were males and 44 (46%) were females. Out of 86 newborns of probiotic group 46 (53%) were males and 40 (47%) were females.⁴

The mean birth weight was 2880±260 grams in group 1. The mean birth weight was 2870±250 grams in group 2. In study done by Wenbin Liu et al, the birth weight in control group ranged from 3.12 to 4.21 kg with an average of 3.75±0.21 kg and in treatment group the birth weight ranged from 3.20 to 4.37 kg with an average of 3.86±0.23 kg.⁵ In group 1, 54 (72%) newborns were born to primigravida and 21 (28.00%) were born to multigravida whereas in group B, 52 (69.33%) newborns were born to primigravida and 23 (30.67%) were born to multigravida. In a study done by Adoba et al, most of mothers of both neonatal jaundice and non-neonatal jaundice group were primigravida (45% v 55%).⁶

In group 1, 47 (62.67%) newborns were born via NVD, 1 (1.33%) via forceps, 27 (36%) via LSCS whereas in group 2, 39 (52%) newborns were born via NVD, 1 (1.33%) via forceps, 35 (46.67%) via LSCS. In study done at Torkman et al, and Mehmet mutlu et al, all enrolled newborns were born by NVD.^{2,3}

In group 1, the mean frequency of stools were 3.76±1.08, 3.72±0.95, 4.02±0.92, 4.03±0.98, 4.09±1.04, 4.01±0.93 and 3.85±1.02 on 1st, 2nd, 3rd, 4th, 5th, 6th and 7th day of life respectively. In group B, the mean frequency of stools were 3.31±1.10, 3.39±0.98, 3.45±0.99, 3.72±0.98, 3.77±1.03, 3.88±0.90 and 3.75±1.00 on 1st, 2nd, 3rd, 4th, 5th, 6th and 7th day of life respectively as shown in table no 2. Statistically significant increase in frequency of stools were observed in group 1 (probiotic group) than group 2 (only distilled water group) on 1st to 3rd day of life. It was observed in our study that use of probiotics in first 3 days of life in newborns increases the frequency of stools in newborns. This was similar to study conducted by Bisceglia M et al, and Ahmadipour et al, which showed that neonates receiving probiotics showed greater frequency of stools compared to that of those in placebo.^{7,8} In a meta-analysis done by Chen et al, and study done by Mohammad et al, it was observed that probiotic supplementation increases the frequency of stool versus placebo.^{9,10}

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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