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EVALUATION OF THE EFFECT OF ASHTAMANGAL GHRI TA ON GROWTH AND DEVELOPMENT OF INFANTS

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ABSTRACT:

Growth is essential feature that distinguishes a child from an adult. Growth and development are continuous processes rapid during first two years of life. Growth is a measure of physical maturation and development is a measure of physiological maturation. The present study has been planned to evaluate the effect of Ashtamangala Ghrita, a herbal preparation, on growth and development of healthy infants. 51 healthy newborn babies were divided into two groups, trial group A (n=26) and control group B (n=25) of both sex. Growth of infants of both group assessed by anthropometric parameters such as weight, head circumference, chest circumference, mid arm circumference, crown to heel length while development was assessed by Arnold Gesell scale focusing on gross motor, fine motor, language, social mile stones achieved since birth for three follow ups with four weeks apart. This study suggest highly significant observation and results of growth velocity in term of weight gain, head circumference, mid arm circumference, chest circumference and crown to heel length while early significant development was achieved also without any significant side effects in group A than group B after oral administration of Ashtamangala Ghrita in a dose of 0.5 ml/kg/day twice daily orally with milk in infants.

KEY WORDS: Anthropometry, Ashtamangala Ghrita, Growth and Development,

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INTRODUCTION

The most dramatic events in growth and development occur before birth and involve the transformation of a fertilized egg into an embryo and a fetus. From the 9th week on (fetal period) somatic changes

consist of increase in cell number and size and structural remodeling of several organ systems. Growth is an indicator for overall wellbeing, chronic disease, interpersonal and psychological stress. Development, the individual level of functioning a child is capable of as a result of maturation of the nervous system and psychological reaction, is not determined solely by either genetics or the environment, but rather by a combination of both. In classical ayurvedic texts Lehan Karma is done for the child as Rakshoghna (protection from the infection), enhance Medha and Smriti. Health of the child depends on Lehan¹. For Lehan Karma, many compounds have been prescribed. Ashtamangal Ghrita is one of them. Therefore, this study was planned to evaluate the effect of *Astamangala Ghrita* on physical growth and development of infants, in terms of change occurred in anthropometry and mile stones during the study period.

MATERIAL AND METHOD

Selection of Patient-Total 57 healthy infants were registered from the Kaumarbhritya/ Balroga OPD, S.S. Hospital, I.M.S., B.H.U, at the time of BCG vaccination after proper screening as per inclusion criteria as predesigned proforma. Out of 57 registered infants, 6 infants were dropped out from the study because they never turn ups on subsequent

follow up after registration. The following inclusion and exclusion criteria were considered for the selection of new born child in this study, at the time of registration.

INCLUSION CRITERIA

- Age eligibility –up to 1 year.
- Gender eligibility –Both male and female
- Infants whose parents were given their written informed consent.
- Infant whose parent was intended to reside within the area of Varanasi city for at least 12weeks.

EXCLUSION CRITERIA

- The Infant who was suffering with any congenital, hereditary or acute systemic illness.
- Infants who do not fulfill the above mentioned criteria.
- Infant who has been dropped on subsequent follow up and whose parents have refused to participate in the study.

Thereafter, all the infants of both sex were randomly distributed as follows -

GROUP A (N=26) : New born healthy children, who were receiving AMG

GROUP B (N=25) : New born healthy children, who were not receiving AMG

PREPARATION OF ASHTAMANGALA GHRITA ²

The basic ingredient of *Ashtamangala Ghrita* - Vacha, Kushtha, Pippali, Siddharthaka, Sariva, Brahmi and Saindhawa pounding in Khalwa Yantra in the form of a soft paste after cleaning. The prepared Kalka has a characteristic smell of drugs and brown in color. *Ghrita* (*butter oil of cows*) was heated slowly in a vessel and withdrawn from the fire then *Kalka* was slowly poured with continuous stirring to avoid burning of the *Kalka*. After homogenous mixing, vessel was kept on the heating device for the *Sneha Paka* process. Quantified water was added in small amount in container of *Ghrita* and *Kalka* by keeping it over the heating device for preparing AMG at moderate temperature till achieving ideal properties of *Sneha Paka*.

Ratio of Ghrita: Kalka: Water was taken as 4:1:16

DOSE AND ADMINISTRATION OF DRUGS

0.5 ml/kg/day in two divided dose via calibrated dropper orally with milk up to three follow ups. (Kumar A, et al 1984 and Singh A, et al 2013).

Assessment of drug response

In both group, growth was assessed at four weeks interval by anthropometrical evaluation³ while development was assessed at 4,8, &12 weeks by Gesell's developmental schedule⁴.

Statistical Analysis

Anthropometry was analysed in terms of mean, standard deviation, unpaired 't' test and chi-square test whereas various parameters of Gesell developmental schedule were analysed in terms of z test and percentage

Observation and Results-To assess the growth and development in infants of both groups, anthropometry and Gesell score, respectively, were considered and following observation were noted-

A. Anthropometry :

i. Weight

Intergroup comparison of mean increment per day in weight during FU2-R, FU3-R, FU2-FU1, Fu3-FU2 and FU-3-FU1 was observed in highly significant in children of group A than group group B except during FU1-R which was significant, in according to statistical analysis made through the unpaired t test (table no. 1).

Table no 1: Weight

S. No.	Group	Mean Increments in weight per day (FU1-R)		Group	Mean Increments in weight per day (FU2-FU1)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	26.83±5.56	t =2.697	A ₁ (n=26) B ₁ (n=25)	31.74 ± 7.83	t =4.785
2	A ₁ (n=26) B ₁ (n=25)	23.23±3.76	p <0.01	A ₂ (n=26) B ₂ (n=25)	22.74±5.318	p<0.001
S. No.	Group	Mean Increments in weight per day (FU2-R)		Group	Mean Increments in weight per day (FU3-FU2)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	29.079±5.12	t =4.516	A ₂ (n=26) B ₂ (n=25)	30.9 ± 7.720	t =4.298
2	A ₂ (n=26) B ₂ (n=25)	23.36±3.79	p<0.001	A ₃ (n=26) B ₃ (n=26)	24.76 ± 4.74	p<0.001
S. No.	Group	Mean Increments in weight per day (FU3-R)		Group	Mean Increments in weight per day (FU1 to FU3)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	29.61±3.83	t =6.683	A ₂ (n=26) B ₂ (n=25)	31.87±6.12	t =6.001
2	A ₃ (n=26) B ₃ (n=25)	23.3±2.79	p<0.001	A ₃ (n=26) B ₃ (n=26)	23.48±3.44	p<0.001

A_R = Group A at the time of registration, B_R = Group B at the time of registration, A₁ = FU-1 in group A. B₁ = FU-1 in group B. A₂ = FU-2 in group A, B₂ = FU-2 in group B. A₃ = FU-2 in group A, B₃ = FU-2 in group B.

ii. Head circumference

Mean increment in head circumference per day was observed higher in infants of

group A than group B during subsequent follow up except during FU2 - FU1 and FU3 – FU2 (Table No. 2).

Table no 2 : Head circumference

S. No.	Group	Mean Increments Head Circumference per day (FU1-R)		Group	Mean Increments Head Circumference per day (FU2-FU1)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	0.057±0.021	t =3.34	A ₁ (n=26) B ₁ (n=25)	0.061±0.015	t =1.659
2	A ₁ (n=26) B ₁ (n=25)	0.042±0.01	p<0.01	A ₂ (n=26) B ₂ (n=25)	0.055±0.09	p>0.05
S. No.	Group	Mean Increments Head Circumference per day (FU2-R)		Group	Mean Increments Head Circumference per day (FU3-FU2)	
		Difference mean (A & B)	Inter group comparison (A VS B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	0.059±.013	t =3.803	A ₂ (n=26) B ₂ (n=25)	0.058±0.0098	t =1.422
2	A ₂ (n=26) B ₂ (n=25)	0.048±.007	p<0.001	A ₃ (n=26) B ₃ (n=25)	0.054±0.0087	p>0.05
S. No.	Group	Mean Increments Head Circumference per day (FU3-R)		Group	Mean Increments Head Circumference per day (FU3-FU1)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	0.079±0.105	t =2.17	A ₁ (n=26) B ₁ (n=25)	0.061±0.009	t =2.312
2	A ₃ (n=26) B ₃ (n=25)	0.049±0.007	p<0.05	A ₃ (n=26) B ₃ (n=25)	0.055±0.008	p<0.05

iii. Chest circumference:

Intergroup comparison of mean increment in chest circumference of infants of group A in between registration to FU1, FU2 and

FU3 was found significant. Than group B However mean increment in chest circumference per day was not seen between FU2 – FU1 and FU3 - FU1 (table no. 3).

Table no 3: Chest circumference

S. No.	Group	Mean Increments Chest Circumference per day (FU1-R)		Group	Mean Increments Chest Circumference per day (FU2-FU1)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	0.057±0.019	t =2.121	A ₁ (n=26) B ₁ (n=25)	0.062±0.019	t =0.590
2	A ₁ (n=26) B ₁ (n=25)	0.048±0.009	p<0.05	A ₂ (n=26) B ₂ (n=25)	0.059±0.011	p>0.05
S. No.	Group	Mean Increments Chest Circumference per day (FU2-R)		Group	Mean Increments Chest Circumference per day (FU3-FU2)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	0.059±0.016	t =2.627	A ₂ (n=26) B ₂ (n=25)	0.060±0.015	t =2.176
2	A ₂ (n=26) B ₂ (n=25)	0.049±0.012	p<0.05	A ₃ (n=26) B ₃ (n=25)	0.052±0.013	p<0.05
S. No.	Group	Mean Increments Chest Circumference per day (FU3-R)		Group	Mean Increments Chest Circumference per day (FU3-FU1)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	0.059±.011	t =2.947	A ₁ (n=26) B ₁ (n=25)	0.061±0.011	t =1.986
2	A ₃ (n=26) B ₃ (n=25)	0.052±.009	p<0.01	A ₃ (n=26) B ₃ (n=25)	0.055±0.009	p>0.05

iv. Mid arm circumference:

Intergroup comparison of mean increment in mid arm circumference after registration

to FU3 was found significant in infants of group A than group B except during FU1 after registration (table no. 4).

Table No 4 : Mid Arm Circumference

S. No.	Group	Mean Increments Mid Arm Circumference per day (FU1-R)		Group	Mean Increments Mid Arm Circumference per day (FU2-FU1)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	0.018±0.005	t =1.913	A ₁ (n=26) B ₁ (n=25)	0.026±0.009	t =2.381
2	A ₁ (n=26) B ₁ (n=25)			A ₂ (n=26) B ₂ (n=25)		
S. No.	Group	Mean Increments Mid Arm Circumference per day (FU2-R)		Group	Mean Increments Mid Arm Circumference per day (FU3-FU2)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	0.021±0.004	t =3.433	A ₂ (n=26) B ₂ (n=25)	0.029±.009	t =3.734
2	A ₂ (n=26) B ₂ (n=25)			A ₃ (n=25) B ₃ (n=26)		
S. No.	Group	Mean Increments Mid Arm Circumference per day (FU3-R)		Group	Mean Increments Mid Arm Circumference per day (FU3-FU1)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26) B _R (n=25)	0.023±0.004	t =5.57	A ₁ (n=26) B ₁ (n=25)	0.028±.006	t =4.815
2	A ₃ (n=26) B ₃ (n=25)			A ₃ (n=26) B ₃ (n=25)		

v. Crown to Heel Length:

Intergroup comparison of mean increment per day of crown to heel length of infants

of group A than group B from R to FU3 was observed significant except during the period from FU1 to FU3 (table no. 5).

Table No. 5 : Crown to Heel Length

S. No.	Group	Mean Increments Crown to Heel Length per day (FU1-R)		Group	Mean Increments Crown to Heel Length per day (FU2-FU1)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26)	0.060±0.014	t =2.380	A ₁ (n=26)	0.074±0.017	t =1.759
	B _R (n=25)			B ₁ (n=25)		
2	A ₁ (n=26)	0.015±0.003	p<0.05	A ₂ (n=26)	0.067±0.012	p>0.05
	B ₁ (n=25)			B ₂ (n=25)		
S. No.	Group	Mean Increments Crown to Heel Length per day (FU2-R)		Group	Mean Increments Crown to Heel Length per day (FU3-FU2)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26)	0.068±0.014	t =2.661	A ₂ (n=26)	0.086±0.021	t =2.177
	B _R (n=25)			B ₂ (n=25)		
2	A ₂ (n=26)	0.059±0.009	p<0.05	A ₃ (n=26)	0.076±0.013	p<0.05
	B ₂ (n=25)			B ₃ (n=25)		
S. No.	Group	Mean Increments Crown to Heel Length per day (FU3-R)		Group	Mean Increments Crown to Heel Length per day (FU3-FU1)	
		Difference mean (A & B)	Inter group comparison (A vs B)		Difference mean (A & B)	Inter group comparison (A vs B)
1	A _R (n=26)	0.073±0.013	t =3.501	A ₁ (n=26)	0.081±0.016	t =2.585
	B _R (n=25)			B ₁ (n=25)		
2	A ₃ (n=26)	0.062±0.009	p<0.01	A ₃ (n=25)	0.072±0.009	p<0.05
	B ₃ (n=25)			B ₃ (n=25)		

B. GESELL DEVELOPMENTAL EXAMINATION

i. At four week (Table no 6) Hand to mouth touch, rolls pathway to side on

supine position, lifted chin off couch on prone position, alert to sound with some throaty noise, watch mother intently when she speaks to him/her were early achieved by maximum infants in group A and proportion was significantly higher.

AT FOUR WEEK AG SCALE	STATUS	NO AND % OF CASE				Z test B/W GP Comparison
		GP A (n=26)	Percentage	GP B (n=25)	Percentage	
Ventral suspension Head momentarily lifted up and elbow flexed	0 (early)	0	(0%)	0	(0%)	Z=0.397(p>0.05) Z=0.397(p>0.05)
	1 (timely)	19	(73.1%)	17	(68%)	
	2 (late)	7	(26.9%)	8	(32%)	
Prone a) Hip and knee are partially extended	0	0	(0%)	0	(0%)	Z=0.738(p>0.05) Z=0.738(p>0.05)
	1	21	(80.8%)	18	(72%)	
	2	5	(19.2%)	7	(28%)	
b) Lifted chin off couch	0	13	(50%)	8	(32%)	Z=1.30 (p>0.05) Z=0.99 (p>0.05) Z=0.403 (p>0.05)
	1	7	(26.9)	10	(40%)	
	2	6	(23.1%)	7	(28%)	
Supine a) Windmill movements	0	12	(46.2%)	6	(24%)	Z=1.655 (p>0.05) Z=0.997 (p>0.05) Z=0.8306 (p>0.05)
	1	11	(42.3%)	14	(56%)	
	2	3	(3%)	5	(20%)	
b) Hand to mouth touch	0	13	(50%)	3	(12%)	Z=2.92(p<0.05) Z=2.09 (p<0.05) Z=0.73(p>0.05)
	1	8	(30.8)	15	(60%)	
	2	5	(19.2%)	7	(28%)	
c) Head side predominance	0	0	(0%) (88.5%)	0	(0%)	Z=1.167 (p>0.05) Z=1.167 (p>0.05)
	1	23	(11.5%)	6	(76%)	
	2	3			(24%)	
d) Both hand fist ed	0	0	(0%)	0	(0%)	Z=0.414 (p>0.05) Z=0.414 (p>0.05)
	1	21	(80.8)	19	(76%)	
	2	5	(19.2%)	6	(24%)	
e) Rolls pathway to side	0	9	(34.6%)	0	(0%)	Z=3.24 (p<0.05) Z=1.84 (p>0.05) Z=0.71 (p>0.05)
	1	11	(42.3%)	17	(68%)	
	2	6	(23.1%)	8	(32%)	
Standing No wt support, curls toes	0	0	(0%)	0	(0%)	Z=0.239 (p>0.05) Z=0.239 (p>0.05)
	1	19	(73.1%)	19	(76%)	
	2	7	(26.9%)	6	(24%)	
Fine motor Hands mostly closed	0	0	(0%)	0	(0%)	Z=0.774 (p>0.05) Z=0.774 (p>0.05)
	1	22	(84.6%)	19	(76%)	
	2	4	(15.4%)	6	(24%)	
Language Alert to sound some throaty noise	0	12	(46.2%)	4	(16%)	Z=2.32 (p<0.05) Z=2.38(p<0.05) Z=0.30 (p>0.05)
	1	9	(34.6%)	17	(68%)	
	2	5	(19.2%)	4	(16%)	
Social a) Watch mother intently when she speaks to him	0	11	(42.3%)	1	(4%)	Z=3.22 (p<0.05) Z=1.84(p>0.05) Z=1.095 (p>0.05)
	1	11	(42.3%)	17	(68%)	
	2	4	(14.4%)	7	(28%)	
b) Follows a dangling object up to 90°	0	0	(0%)	0	(0%)	Z=0.77 (p>0.05) Z=0.77 (p>0.05)
	1	20	(76.9%)	19	(76%)	
	2	6	(23.1%)	6	(24%)	
Tonic neck reflex	0	0	(0%)	0	(0%)	Z=0.403 (p>0.05)

AT FOUR WEEK AG SCALE	STATUS	NO AND % OF CASE				Z test B/W GP Comparison
		GP A (n=26)	Percentage	GP B (n=25)	Percentage	
	1	20	(76.9%)	18	(72%)	Z=0.403 (p>0.05)
	2	6	(23.1%)	7	(28%)	

ii. At eight week (Table no 7)- Chin lifted off the couch on prone position , head maintained in the plane of body momentarily in supine position, social interaction such as eye to eye contact, fixed and focuses gaze were achieved earlier in more infants of group A as compared to group B and proportion was significantly higher.

Table no 7 :

A G SCALE AT EIGHT WEEK	STATUS	NO AND % OF CASE				Z test B/W GP COMPARISON
		GP A (n=26)	Percentage	GP B (n=25)	Percentage	
Ventral suspension a) Head maintained in the same plane as rest of the body	0	0	0%	0	0%	Z=0.414(p>0.05)
	1	21	80.8%	19	76%	Z=0.414 (p>0.05)
	2	5	19.2%	6	24%	
b) Momentarily lifted the trunk	0	0	0%	0	0%	Z=0.69 (p>0.05)
	1	21	80.8%	20	80%	Z=0.69 (p>0.05)
	2	5	19.2%	5	20%	
Prone a) Head maintained in the mid plane	0	0	0%	0	0%	Z=0.58 (p>0.05)
	1	19	73.1%	20	80%	Z=0.58
	2	7	26.9%	5	20%	
b) Chin lifted off the couch	0	8	30.8%	2	8%	Z=2.04 (p<0.05)
	1	12	46.2%	18	72%	Z=1.87 (p>0.05)
	2	6	23.1%	5	20%	Z=0.27 (p>0.05)
Supine a) Baby is held in a sitting position	0	0	0%	0	0%	Z=0.692(p>0.05)
	1	21	80.8%	20	80%	Z=0.692 (p>0.05)
	2	5	19.2%	5	20%	
b) Head maintained in the plane of body momentarily	0	5	19.2%	0	0%	Z=2.38 (p<0.05)
	1	16	61.5%	20	80%	Z=1.45 (p>0.05)
	2	5	19.2%	5	20%	Z=1.45(p>0.05)
c) Back is rounded	0	1	3.8%	0	0%	Z=0.99 (p>0.05)
	1	19	73.1%	20	80%	Z=0.582(p>0.05)
	2	6	23.1%	5	20%	Z=0.267 (p>0.05)
Standing Can hold head up for some time	0	2	7.7%	2	8%	Z=0.040 (p>0.05)
	1	19	73.1%	16	64%	Z=0.698 (p>0.05)
	2	5	19.2%	7	28%	Z=0.738 (p>0.05)
Fine motor Hand kept open	0	3	11.5%	3	12%	Z=0.051 (p>0.05)
	1	19	73.1%	16	64%	Z=0.698 (p>0.05)
	2	4	15.45%	6	24%	Z=0.77 (p>0.05)
Language Ah uh ch, smiles	0	12	46.2%	8	32%	Z=1.035 (p>0.05)
	1	14	53.8%	16	64%	Z=0.736 (p>0.05)
	2	0	0%	1	4%	Z=1.03 (p>0.05)
Social a) Eye to eye contact present	0	11	42.3%	4	16%	Z=2.06 (p>0.05)
	1	9	34.6%	14	56%	Z=1.53 (p>0.05)
	2	6	23.1%	7	28%	Z=0.4033 (p>0.05)
b) Fixed and focuses gaze	0	6	21.1%	1	4%	Z=1.97 (p<0.05)
	1	13	50%	15	60%	Z=0.72 (p>0.05)
	2	7	26.9%	9	36%	Z=0.698 (p>0.05)
Tonic neck reflex	0	0	0%	0	0%	

	1	20	76.9%	18	72%	Z=0.4033(p>0.05)
	2	6	23.1%	7	28%	Z=0.403(p>0.05)

iii. At twelve week (Table no 8)- Shoulder and chin lifted off the couch on prone position, head held up most of the time but it tends bob forwards on supine

position, babbles when spoken, were early achieved by infants of group A as compared to group B and proportion was highly significant in group A than group B.

Table no 8 :

A G Scale At Twelve Week	Status	No and % of Case				Z test B/W GP COMPARISON
		GP A (n=26)	Percentage	GP B (n=25)	Percentage	
Ventral suspension Head maintained well beyond the plane of the rest of the body	0	0	(0%)	0	(0%)	Z=0.77 (p>0.05) Z=0.77 (p>0.05)
	1	22	84.6%	19	76%	
	2	4	15.4%	6	24%	
Prone a) Pelvis is kept flat on couch with legs completely extended	0	0	0%	0	0%	Z=0.692 (p>0.05) Z=0.692 (p>0.05)
	1	21	80.8%	20	80%	
	2	5	19.2%	5	20%	
b) Shoulder and chin is lifted off the couch	0	10	38.5%	3	12%	Z=2.16(p<0.05) Z=1.26 (p>0.05) Z=0.738 (p>0.05)
	1	11	42.3%	15	60%	
	2	5	19.2%	7	28%	
Supine Head held up most of time but it tends bob forwards	0	6	23.1%	1	4%	Z=1.98(p<0.05) Z=0.792 (p>0.05) Z=0.774 (p>0.05)
	1	16	61.5%	18	72%	
	2	4	15.4%	6	24%	
Standing Lift foets	0	0	0%	0	0%	Z=0.414 (p>0.05) Z=0.414 (p>0.05)
	1	21	80.8%	19	76%	
	2	5	19.2%	6	24%	
Fine motor a)Hands mostly open	0	1	3.8%	1	4%	Z=0.028 (p>0.05) Z=0.414 (p>0.05) Z=0.432 (p>0.05)
	1	21	80.8%	19	76%	
	2	4	15.4%	5	20%	
b)Grasp reflex disappear	0	0	0%	0	0%	Z=0.709 (p>0.05) Z=0.709 (p>0.05)
	1	21	80.8%	22	88%	
	2	5	19.2%	3	12%	
c)Play with ratal	0	0	0%	0	0%	Z=1.48 (p>0.05) Z=1.48 (p>0.05)
	1	23	88.5%	18	72%	
	2	3	11.5%	7	28%	
Language Cooing present	0	11	42.3%	6	24%	Z=1.38 (p>0.05) Z=0.99 (p>0.05) Z=0.462 (p>0.05)
	1	12	46.2%	15	60%	
	2	3	11.5%	4	16%	

A G Scale At Twelve Week	Status	No and % of Case				Z test B/W GP COMPARISON
		GP A (n=26)	Percentage	GP B (n=25)	Percentage	
Social a)Can follow an object up to 180°	0	0	0%	0	0%	Z=0.738(p>0.05)Z=0.738 (p>0.05)
	1	21	80.8%	18	72%	
	2	5	19.2%	7	28%	
b)Babbles when spoken to	0	5	19.2%	0	0%	Z=2.30 (p<0.05) Z=0.17 (p>0.05) Z=1.30 (p>0.05)
	1	15	57.7%	15	60%	
	2	6	23.1%	10	40%	
Tonic neck reflex	0	0	0%	0	0%	(p>0.05)
	1	26	100%	25	100%	
	2	0	0%	0	0%	

DISCUSSION

Ashtamangala Ghrita enhance physical and mental growth and development in infant and it has Rakshoghna, Medhya and Smritivardhaka properties⁵. Analysis of anthropometrical results showed that the growth in treated groups tended to remain towards the higher side of normal ranges as compared to untreated group, suggesting that this Ghrita probably enhance the bioavailability of the nutrients at cellular level. Better physical and mental growth occurred in AMG group's infants is because Balya, Brihaniya and Vrishya effect of Brahmi⁶, Vacha⁷ and Pippali⁸ and Agnimandyanashaka effect of Sariva⁹ and Siddharthaka; Smritikara (memory enhancer) and Medhya effect of Brahmi¹⁰, neuroprotective¹¹, memory enhancer¹² effect of Vacha. Brahmi¹³ and Vacha¹⁴ have Swarya, Swarkrita initiates speech and language, nerve impulse transmission enhancer properties that helps

in early achievement of language and social interaction mile stones. Sangyasthapaka property of Vacha¹⁵ can be considered for the alert state of infants which may help in early achievement of mile stones. Antimicrobial (anti staphylococcal) and antioxidant property of Vacha¹⁶ and Brahmi, immunomodulator effect of Pippali¹⁷, Sariva¹⁸ and Brahmi¹⁹ increase in serum IgG & IgA level and can be considered for reducing morbidity incidence in patients of AMG group as well as helpful in enhancing growth and development in infants of same group. Butter oil also has antioxidant, anti-infective effect. Tikshna, Sukshma, Tridoshashamaka properties of Saindhava²⁰ and Srotoshodhaka (micro/macropore and channels purifying) property of Vacha and Pippali¹⁷ can help in increasing drug's bioavailability at tissues level.

CONCLUSION

Growth and development in infants can be enhanced by Ashtamangala Ghrita during infantile period, in terms of significant gain in weight, head circumference, mid arm circumference, chest circumference and crown to heel length as well as achieving early mile stones development

without presenting side effects. It can be clearly seen from the gathered observation that treated group of Infants show better growth and development and reduction in morbidity than controlled group.

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