The nutritional status and cognitive & motor development of children in Nepal.

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Abstract

Background: Children are viewed as the best national asset. Nutrition influences physical growth, morbidity, mortality, cognitive development, reproduction and physical work ability, and it thus impacts human execution, health and survival. There is a direct effect of nutrition on the communication skill development, gross motor development, fine motor development, problem-solving skill and personal social development of children.
Aim: To assess the nutritional status of 6-24 months children and investigate the association with the cognitive development of children.
Methods: The cross-sectional research design, the basically analytical design was adopted to depict the association across child feeding practices, nutritional status and cognitive and motor development of children. This study adopted mixed methods – quantitative and qualitative data in accordance with pragmatic philosophy and Health Belief Model. This study explored the Infant and Young Child Feeding (IYCF) practices using WHO guidelines, child nutrition status (WHO Anthro) and cognitive and motor development by using Age and Stages Questionaire (ASQ). It covered the 347 sample households having 6-24 months of children.
Results: Acute malnutrition was found in 6.4% (4.3 - 9.5 95% C.I.) among the 6-24 months children whereas the problem of stunting was very high at 64.8 % (59.6 - 69.8 95% C.I.) and underweight was among the 26.8% children (22.1 - 31.4 95% C.I.). There was a significant correlation of nutritional status with 16 and above month children in gross motor development, fine motor development and problem-solving skill development (p<0.05, i.e. p=0.011, p=0.047 & p=0.047). Mother's education was found one important factor which had a significant effect on the practices of dietary diversity.

Keywords: Children, Nutrition, Growth, Cognitive, Motor development.

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The cross-sectional research design, the basically analytical design was adopted to depict the association across child feeding practices, nutritional status and cognitive and motor development of children. This study adopted mixed methods – quantitative and qualitative data in accordance with pragmatic philosophy and Health Belief Model. This study explored the Infant and Young Child Feeding (IYCF) practices using WHO guidelines, child nutrition status (WHO Anthro) and cognitive and motor development by using Age and Stages Questionaire (ASQ). It covered the 347 sample households having 6-24 months of children.

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There was a significant correlation of nutritional status with 16 and above month children in gross motor development, fine motor development and problem-solving skill development (p<0.05, i.e. p=0.011, p=0.047 & p=0.047).

Nutrition status and communication development of children

There is significant correlation (p<0.05, i.e. p=0.24) with age group of 6 months between underweight and communication skill development (Table 1) [1].

Nutrition status and gross motor development of children

There is strong significant correlation (p<0.05, i.e. p=0.000) only with age group of 20 months between underweight and gross motor skill development. Similarly, there is significant correlation (p<0.05, i.e. p=0.011, p=0.047 & p=0.047) only with age groups of 16 months, 22 months and 24 months respectively between stunting and gross motor skill development. Likewise, there is strong significant correlation (p<0.05, i.e. p=0.000) only with age group of 20 months between wasting and gross motor skill development (Table 2) [2, 3].

Nutrition status and fine motor development of children

There is significant correlation (p<0.05, i.e. p=0.009 & p=0.010) only with age groups of 16 months and 20 months between underweight and fine motor skill development. Similarly, there is strong significant correlation (p<0.05, i.e. p=0.005) only with age group of 16 months between stunting and fine motor skill development (Table 3) [4-7].

Nutrition status and problem solving development of children

There is significant correlation (p<0.05, i.e. p=0.019) only with age groups of 20 months between underweight and problem solving skill development. Similarly, there is significant correlation (p<0.05, i.e. p=0.000 & p=0.040) only with age groups of 16 months and 24 months respectively between stunting and problem solving skill development. Likewise, there is strong significant correlation (p<0.05, i.e. p=0.007) only with age group of 20 months between wasting and problem solving skill development (Table 4) [8-12].

Table 1. *Nutrition status and communication development of children.*

		Age of Children in Months									
		6	8	10	12	14	16	18	20	22	24
Underweight	Pearson Correlation	.458*	.012	.247	.058	.219	.052	.174	.291	.123	.295
	Sig. (2-tailed)	.024	.939	.159	.750	.273	.724	.318	.058	.511	.172
Stunting	Pearson Correlation	.398	.135	.322	-.244	-.009	.206	-.188	.154	.315	.336
	Sig. (2-tailed)	.054	.393	.063	.172	.966	.161	.279	.324	.085	.117
Wasting	Pearson Correlation	-.107	-.162	-.052	.269	.276	-.127	.272	.247	-.270	-.021
	Sig. (2-tailed)	.620	.306	.772	.130	.164	.388	.120	.111	.141	.926

Table 2. *Nutrition status and gross motor development of children.*

		Age of Children in Months									
		6	8	10	12	14	16	18	20	22	24
Underweight	Pearson Correlation	.160	.075	.309	.305	.214	.266	-.145	.561**	.143	.143
	Sig. (2-tailed)	.455	.639	.075	.084	.285	.068	.405	.000	.303	.303
Stunting	Pearson Correlation	.354	.207	.330	.318	.103	.364*	-.183	.162	.272*	.272*
	Sig. (2-tailed)	.089	.187	.057	.072	.608	.011	.293	.298	.047	.047
Wasting	Pearson Correlation	-.271	-.149	-.043	.024	.166	-.022	.057	.523**	-.147	-.147
	Sig. (2-tailed)	.200	.346	.809	.896	.407	.884	.750	.000	.288	.288

Table 3. *Nutrition status and fine motor development of children.*

		Age of Children in Months									
		6	8	10	12	14	16	18	20	22	24
Underweight	Pearson Correlation	.028	-.103	.206	.127	.120	.372**	-.019	.388*	.304	.388
	Sig. (2-tailed)	.898	.516	.242	.482	.550	.009	.915	.010	.097	.067
Stunting	Pearson Correlation	.161	.064	.188	.253	-.018	.395**	-.222	.287	.322	.335
	Sig. (2-tailed)	.463	.689	.287	.155	.928	.005	.206	.062	.077	.118
Wasting	Pearson Correlation	-.141	-.265	.065	-.123	.161	.094	.220	.214	.010	.085
	Sig. (2-tailed)	.521	.090	.716	.494	.424	.523	.218	.168	.959	.699

Table 4. *Nutrition status and problem solving development of children.*

		Age of Children in Months									
		6	8	10	12	14	16	18	20	22	24
Underweight	Pearson Correlation	.162	.098	.255	.224	.051	.279	.043	.356*	.347	.355
	Sig. (2-tailed)	.449	.535	.146	.209	.799	.055	.808	.019	.056	.096
Stunting	Pearson Correlation	.376	.255	.278	.217	-.016	.546**	-.113	.055	.286	.432*
	Sig. (2-tailed)	.070	.103	.111	.225	.936	.000	.517	.726	.119	.040
Wasting	Pearson Correlation	-.318	-.149	-.011	.021	.078	-.135	.211	.407**	.148	-.075
	Sig. (2-tailed)	.130	.346	.951	.909	.699	.359	.231	.007	.428	.734

Table 5. *Nutrition status and personal social development of children.*

		Age of Children in Months									
		6	8	10	12	14	16	18	20	22	24
Underweight	Pearson Correlation	.020	.248	.284	.221	-.031	.178	-.038	.191	-.022	.052
	Sig. (2-tailed)	.925**	.113	.104	.216	.877	.226	.827	.219	.905	.812
Stunting	Pearson Correlation	.519**	.240	.356*	.044	-.033	.437**	-.166	.085	.160	.452*
	Sig. (2-tailed)	.009	.126	.039	.810	.870	.002	.341	.587	.389	.030
Wasting	Pearson Correlation	-.536**	.056	-.040	.175	.005	-.169	.095	.185	-.235	-.383
	Sig. (2-tailed)	.007	.726	.821	.329	.979	.252	.593	.234	.204	.071

Nutrition status and personal social development of children

There is correlation ($p<0.05$) with age groups of 6 months, 10 months, 16 months and 24 months between stunting personal social skill development. Likewise, there is strong significant correlation ($p<0.05$, i.e. $p=0.007$) only with age group of 6 months between wasting and personal social skill development (Table 5) [13-18].

Conclusion

The cognitive and motor development skill was found better among the children. The study found the better status of communication skill development (cut off point 20.7 where mean value 43.6), gross motor development (cut off point 31.1 where mean value 46.1), fine motor development (cut off point 32.79 where mean value 44.09), problem solving skill (cut off point 28 where mean value 42.27), and personal social development (cut off point 28 where mean value 47.66). The average mean value was higher than the cutoff point of each types of development.

There was significant correlation of nutritional status with 16 and above month children in gross motor development, fine motor development and problem solving skill development whereas there was relationship of nutritional status with 6 to 24 months' children in personal social development. But there was no relationship found between the nutritional status and communication skill development of children, except with 6 months' children.

From the perspective of parents' experience in overall development of their children, the overall development of 6-24 months' children was found satisfactory level. Physical growth and development, and cognitive development was asked with the parents when majority of parents shared the well development in movement, body language, walking, hearing, vision and health problem in child.

Recommendation

The further researcher may be done similar study in other most under privileged communities which may give the new knowledge to design and intervene nutrition programme in communities.

The study found that higher prevalence of malnutrition, so an in-depth longitudinal study on pregnant women and children to identify causative factors of malnutrition among children.

An action research on behaviour modification of care takers to improve the health and nutritional status of below 2 years children and early intervention may be conducted to study its impact on developmental profile of the children.

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