

Correlates of school going children's calorie consumption and nutritional level in Mizoram

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ABSTRACT

Across the world, the problem of malnutrition has been perceived as the most dangerous and menacing factor towards ensuring a decent and secure livelihood. The problem of malnutrition has got social, political, technical and motivational dimensions as well. Education being the basic driving force for any economy and process per se, the school going children need to be focussed and attended comprehensively so that they can grow up themselves as healthy citizens having belligerent mind and body. The available research findings on child nutrition has proved that nutrition is basically a complex phenomenon and cannot be managed in a single intervention. Accordingly the present study was conceptualised with an aim to identify the correlates of school going children's calorie consumption and nutritional level. The nutrition has been conceived as a composite configuration of food intake, calorie intake, high value food intake, sanitation and total calorie consumption. The study was conducted at Champhai district of Mizoram. It depicts that the predictor variables like age, training, family size, subsidiary income, parents education, crop yield, etc. have become predominant factors in making a discernable difference between high and low level of nutrition status among the respondents.

Keywords: Calorie consumption, child nutrition, food intake and malnutrition

Malnutrition is not only a biological phenomena, it is a synergy of biophysical as well as social process. Access to sufficient and nutritionally rich food is also one of the discerning factors that impacts heavily on the nutritional aspects on the school children. The analysis of malnutrition thus needs a complex framework encompassing all the cognate factors like size of holding, parental education, food intake volume, energy intake, chronological age, ill behaviour of agriculture, information seeking behaviour, medical and health care and so on. Malnutrition has a dampening effect on their growth potential particularly during their spurt period (Gill *et al*, 2008). It had also been studied that nutrition knowledge level of mothers significantly affects the nutritional status of their children. (Chandna and Sehga, 1995). The educational performance is a strong and illustrative component of nutritional management and nutritional level of school going children. The level of nutrition figures up the mental alertness, physical fitness and motivational preparedness of a child in a teaching learning environment. The nerve cells are operationally and functionally supported by nutritional supplements which would ultimately help build up analytical acumen and passionate expression within a child. Under this research perspective the present study was formulated with an aim to identify the correlates of school going children's calorie consumption and nutritional level.

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MATERIALS AND METHODS

Purposive multi stage random sampling methods was followed to select eighty number of respondents in the present study. The respondents belonged to the age group of 6 – 14 years attending the primary school and middle school level. So far as the gender is concerned 50% of them are boys and 50% of them are girls. The data were collected from four localities of Champhai district of Mizoram. The data were subjected to correlation, path and discriminant analysis to extract otherwise hidden information.

RESULTS AND DISCUSSION

The co-efficient of correlation presented in table-1 shows that none of the variable has recorded significant correlation that does not necessarily mean that the interactive relationship between the variables have got no social implication. This variable might have recorded a significant relationship given the level of significance has been fixed at 10 or 20% that is why some of the variables(3) in order of coefficient of correlation value have been selected for discussion. Family size have recorded perceptible relationship with the total calorie consumption which indicates that as there is integration of resources and capability in a large family, the food intake volume and high value food intake of respondents is higher which ultimately leads to the higher calorie consumption of the respondents. The other two variables in order of relationship which has come up to the tally are subsidiary family income and training.

Table 1: Co-efficient of Correlation between total calorie consumption and twelve independent variables

Variables	r value
Age(X ₁)	0.03
Education(X ₂)	-0.01
Parents Education(X ₃)	-0.02
Family size (X ₄)	-0.19
Size of Homestead Land (X ₅)	-0.06
Size of Cultivable Land (X ₆)	-0.01
Family Income[Agri.] (X ₇)	-0.06
Family Income[Subsidiary.] (X ₈)	0.07
Total Family Income (X ₉)	-0.00
Total Crop Yield (X ₁₀)	-0.02
Home Consumption (X ₁₁)	-0.01
Training(X ₁₂)	0.11

Note: * $r \geq 0.220$ are significant at $P = 0.05$

Table-2 shows that the variable age and education have recorded significant and positive correlation with nutritional status. This indicates that respondents of higher age and higher education ultimately have higher nutritional status than those with lower age and lower education. This is because with the increase in age their demand for food is higher, as they consume more food their calorie consumption grows higher which ultimately leads to higher nutritional status.

Table 2: Co-efficient of Correlation between nutritional level and twelve independent variables

Variables	r value
Age(X ₁)	0.83**
Education(X ₂)	0.77**
Parents Education(X ₃)	0.01
Family size (X ₄)	0.09
Size of Homestead Land (X ₅)	0.00
Size of Cultivable Land (X ₆)	0.05
Family Income[Agri.] (X ₇)	0.01
Family Income[Subsidiary.] (X ₈)	0.02
Total Family Income (X ₉)	-0.01
Total Crop Yield (X ₁₀)	0.13
Home Consumption (X ₁₁)	0.14
Training(X ₁₂)	-0.14

Note: *significance of r at 5% = >0.220 , **significance of r at 1% = >0.287

Table-3 shows that age has recorded the highest direct effect followed by education and family size. Age and education too have recorded substantive indirect effect followed by family income. But so far as total effect is in concern none of the variables has

recorded a significant level of impact. However, based on the degrees of impact family size has recorded highest effect on the total calorie consumption level. The residual effect here has been found to be too high. It indicates that the spurious effect has superseded fairly the amount of explicable variability embedded with the interactive relationship of these exogenous and endogenous variables.

Table-4 shows that the direct effect of age on nutritional status has so far been the highest followed by size of homestead land and family income through agriculture. In determining nutritional status of the children along with age the other important considerations are size of homestead land and family income through agriculture. So, modernization of agriculture as well as effective management of homestead land both would be imparting on the nutritional level being achieved by the children. The residual effect is just only 27.76% to conclude that around 72% of the total variability embedded with the consequent variable has been successfully explained by having the combination of 12 exogenous variables.

Figure-1 reveals that the variable age has got the highest discriminatory function in creating variation of total calorie consumption among the respondents. It has been followed by other two variables, training and education of the respondents. So, these three variables in order of importance might be conceived while management strategy will be taken out to ensure the total calorie consumption level of the respondents.

Figure-2 reveals that the variable age has got the highest discriminatory function in creating variation of nutritional status among the respondents. It has been followed by other two variables, education and agriculture income. So, these three variables in order of importance might be conceived while management strategy will be taken out to ensure the level of nutritional status among the respondents.

The entire research study on child nutrition has proved that the nutrition is basically a complex phenomena and cannot be managed in the single intervention, it's not been a single chance factor either. In this study, the nutrition has been conceived as a composite configuration of food intake, calorie intake, high value food intake, sanitation and total calorie intake. It depicts that the predictor variables like age, training, family size, subsidiary income, parents education, crop yield, etc. have become predominant factors in making a discernable difference between high and low level of nutrition status among the respondents.

Table 3: Path analysis: Total calorie consumption and twelve exogenous variables

Variables	Direct effect	Indirect effect	Total effect	Substantial indirect effect		
				I	II	III
Age(X ₁)	0.4077	-0.3763	0.0314	-0.3529 (X ₂)	-0.023 (X ₁₂)	-0.0077 (X ₄)
Education(X ₂)	-0.3745	0.3635	-0.011	0.3842 (X ₁)	-0.0231 (X ₁₂)	0.006 (X ₅)
Parents Education(X ₃)	0.0188	-0.0339	-0.0151	-0.0439 (X ₄)	-0.0237 (X ₁)	0.0186 (X ₂)
Family Size (X ₄)	-0.2038	0.0143	-0.1895	-0.0277 (X ₇)	0.0154 (X ₁)	0.0127 (X ₁₀)
Size of Homestead Land (X ₅)	-0.0362	-0.0214	-0.0576	-0.0659 (X ₁)	0.0622 (X ₂)	-0.0497 (X ₄)
Size of Cultivable Land (X ₆)	0.0382	-0.0448	-0.0066	-0.0538 (X ₄)	-0.0241 (X ₅)	0.0174 (X ₁₂)
Family Income[Agri.] (X ₇)	-0.0566	0.002	-0.0546	-0.0998 (X ₄)	0.0406 (X ₁₂)	0.0266 (X ₉)
Family Income[Subsidiary.] (X ₈)	-0.0159	0.0854	0.0695	0.0891 (X ₄)	-0.0642 (X ₂)	0.0403 (X ₁)
Total Family Income (X ₉)	0.0373	-0.0395	-0.0022	-0.0403 (X ₇)	-0.032 (X ₂)	0.0317 (X ₁₂)
Total Crop Yield (X ₁₀)	0.0295	-0.0516	-0.0221	0.0454 (X ₁₂)	-0.0454 (X ₇)	0.0424 (X ₁)
Home Consumption (X ₁₁)	-0.0154	0.0052	-0.0102	-0.0476 (X ₄)	0.0388 (X ₁₂)	-0.0261 (X ₇)
Training(X ₁₂)	0.1228	-0.0159	0.1069	-0.0764 (X ₁)	0.0704 (X ₂)	-0.0187 (X ₇)

Residual effect: 0.9284

Table 4: Path analysis: Nutritional level and twelve exogenous variables

Variables	Direct effect	Indirect effect	Total effect	Substantial indirect effect		
				I	II	III
Age (x ₁)	0.9212	-0.0952	0.826	-0.0573 (X ₂)	-0.0324 (X ₅)	-0.0114 (X ₈)
Education (x ₂)	-0.0608	0.8342	0.7734	0.8680 (X ₁)	-0.0333 (X ₅)	-0.0197 (X ₈)
Parents Education (x ₃)	0.0348	-0.0225	0.0123	-0.0534 (X ₁)	0.0471 (X ₉)	-0.0442 (X ₈)
Family Size (x ₄)	-0.0008	0.0925	0.0917	-0.0607 (X ₇)	0.0502 (X ₈)	0.0489 (X ₅)
Size of Homestead Land (x ₅)	0.2007	-0.0812	0.1195	-0.0782 (X ₆)	-0.0328 (X ₉)	-0.0311 (X ₁)
Size of Cultivable Land (x ₆)	-0.1177	0.1658	0.0481	0.1334 (X ₅)	0.0263 (X ₈)	0.0150 (X ₁₁)
Family Income [Agri.] (x ₇)	-0.124	0.1376	0.0136	0.0868 (X ₉)	0.0533 (X ₁₁)	0.0307 (X ₈)
Family Income [Subsidiary.] (x ₈)	-0.1149	0.1297	0.0148	0.0911 (X ₁)	0.0526 (X ₉)	-0.0299 (X ₁₁)
Total Family Income (x ₉)	0.1218	-0.13	-0.0082	-0.0884 (X ₇)	-0.0540 (X ₅)	-0.0496 (X ₈)
Total Crop Yield (x ₁₀)	0.0012	0.1331	0.1343	-0.0996 (X ₇)	0.0959 (X ₁)	0.0784 (X ₁₁)
Home Consumption (x ₁₁)	0.1155	0.0232	0.1387	-0.0572 (X ₇)	0.0298 (X ₈)	0.0285 (X ₉)
Training (x ₁₂)	-0.0126	-0.1221	-0.1347	-0.1725 (X ₁)	-0.0411 (X ₇)	0.0365 (X ₁₁)

Residual effect: 0.2776

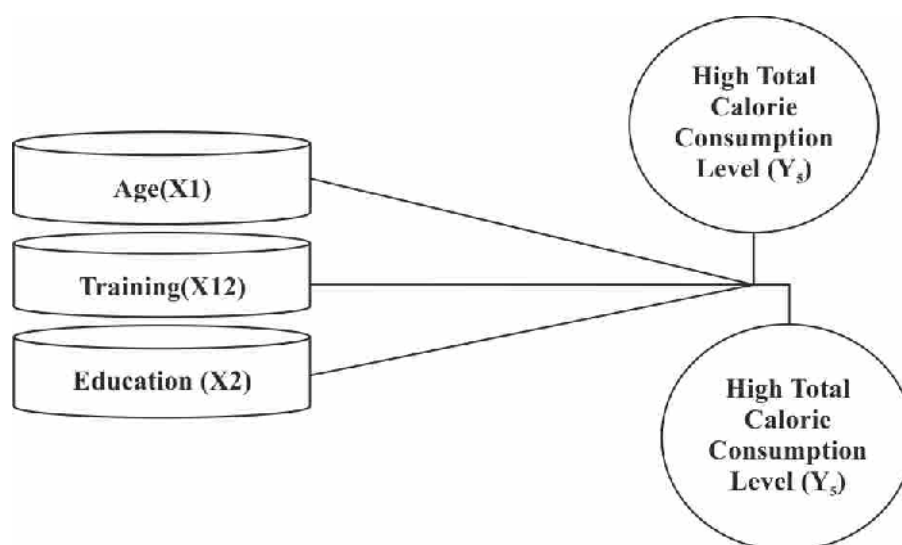


Fig. 1: Discriminant analysis: Total calorie consumption and twelve independent variables

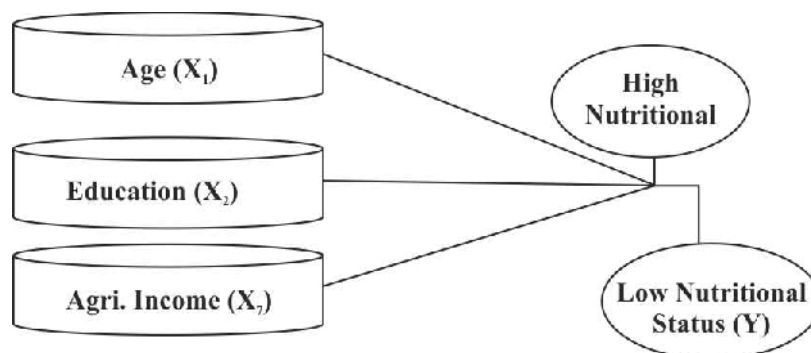


Fig. 2: Discriminant analysis: Nutritional level and twelve independent variables

Some important indicators however are missing from the study and these are Body Mass Index (BMI), haemoglobin level in blood and anaemic level and other disease frequency and vulnerability level. There are elements of contradictions between amounts of food consumed and calorie intake, proportion between common food and high value food, explicit hunger and implicit hunger and so on. In near future, the earth population will be hungrier and the hunger map will keep swallowing almost 80%

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of the geographical area. Every new nation against every month will be joining the row of hungry nations. The climate change and global warming are exerting more and more stress of the productive behaviour of different crops, fishes and animal resources too. That’s why the present research is leaving behind threads of future research for modelling a resilient system towards managing malnutrition and confronting the challenges of hunger, poverty and voiceless ness.

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