

# Effects of Information Communication Technology (ICT) in the Childhood Developments and Lives of Disabilities: A Multivariate Analysis

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**Abstract:** This study investigates the factors acceptance of childhood health and development of disability and the quality of everyday lives of disabilities. Exploratory factor analysis (EFA) is a widely used to identify the factors which are responsible to health and development. This research is sample based and data has been collected using a structured questionnaire and assessed according to the acceptance of anthropometric measurements, disability scale and ICT relational quality measure. A structural equation modeling may conduct to justify the overall relationship of the variables which are majorly responsible. Overall, the respondent acceptance of ICT was moderate especially who has good health condition. Results shows positive correlations between malnutrition and disability condition as well as disability and ICT for quality improvement of live of disabilities. Our research findings can be used to improve individuals, social as well as national development and provide psychological intervention to promote their acceptance of disability.

**Keywords:** Information Communication Technology, Malnutrition and Disability, Factor Analysis, Childhood Development, Bangladesh

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## 1. Introduction

According to “The World Health Organization Report on Disability” in 2011 estimates that between 15% and 19% of the population has different type of disability problem which should not be ignored (Pascual, Ribera, Granollers, & Coiduras, 2014) on the other hand approximately 93 million children aged 0-14 years living with “moderate or severe disability” which indicate every of twenty children globally (5.1%) (WHO, 2011). The United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) estimated that 10 percent of the world's population which is 650 million people live with a disability (Aziz, Isa, & Fadzir, 2011) and childhood malnutrition is a leading cause of many diseases (Megabiaw and Rahman, 2013; Rahman et al., 2007 & 2009) including childhood disabilities and also it may be linked to disability in later life. Vicente and López (2010) find more than 18 percent of the world's population sustains from a variety of disabilities. Disabilities is a common

finding in surveys of the all ages people specially to the child in both developing and developed countries due to increasing incidence of various accident and health issues; for example in many developing countries, 30%–72% of childhood blindness is avoidable (Nallasamy et al., 2011, Rahman & Sapkota, 2014).

Due to lack of adequate nutrition, the childhood physical and cognitive developments are impaired (Rahman et al., 2008; Rahman and Biswas, 2009) and the disability situation has undergone substantial change globally and these progressive steps are yet to reach millions of disabled children in rural Bangladesh. It is estimated that disabled child represent around 85 percent of the world's disabled children under 15 years of age live in developing countries (Robson & Evans, 2003) where Bangladesh lies. Around 13 million people in Bangladesh are physically handicapped of which 3 million are children aged under 15 years (Hossain, 2010) which is increasing just like population growth. So this problem represents not only a major health issue but also a

prime cause of poverty and underdevelopment.

Children with disabilities may be particularly vulnerable to malnutrition during humanitarian crises and children lacking specific nutrients may develop impairments. At the same time, recent UNESCO Global report (Bendix, 2013) indicates that people with disabilities face a wide range of barriers, including access to information, education and in future the disabled child face a lack of job opportunities. Recently study shows technologies have had a positive influence on various perspective of the life of people with disability (Mohammadi, Momayez, & Rahbar, 2014). Domingo (2012) refers the information system can offer people with disabilities the assistance and support they need to achieve a good quality of life and allows them to participate in the social and economic life. (Şimşek, Altun, & Ateş, 2010) describes

“Information & Communication Technology (ICT) is the study, design, development, implementation, support or management of computer-based information systems, particularly software applications and computer hardware”.

ICT is one of the important tools and techniques which can be used to ensure the social development (Şimşek et al., 2010). ICT helps children with malnutrition attain different skills to become more competent to cope with this global world (Gulati, 2011). Most of the developed countries include the impaired children live under their nutrition level and who are abnormal in mainstream development with the use of ICT. So the use of ICT by impaired children and the society should be increased in developing country and ensure their participation in the mainstream development.

In this present world, rapid changes of global environment technology has become an effective tool for socio-economic development at individual, community, national and global perspective (Islam, Ashraf, Rahman, & Hasan, 2015; Hasan, Ashraf, Abdullah, & Murad, 2015). Due to lack of access to ICT tools results in digital divide for people with disabilities (PWDs). They are left behind but they can be countered by whole some participation of PWDs in designing the course of their life by getting information on new opportunities.

The objective of this study is to identify key factor impacts of ICT in the lives of disabled children causes of malnutrition in Bangladesh. This study attempts to find out how ICT brings changes in the society ensuring the impaired children participation in all spheres of lives. The other objective is to describe the prevalence of malnutrition and identify the associated factors among the children under age 15 in Bangladesh.

## 2. Literature Review

Children with malnutrition having disabilities under aged 15 may be more likely to face discrimination and restricted access to social services like education, access to the play with mainstream children and so on (T. Ahmed, 2014; Sally et al., 2012). In developed countries, children screening by using ICT like TV Shows or Computer game or Simulator program gives positive impact to the disability module participated in fewer early learning activities, but were only

slightly less likely to attend pre-school (Rahman and Harding, 2010 & 2013). Family's economic insufficiency and socioeconomic conditions were associated with child disability results because they do not get proper nutrition in proper time of their daily lives.

Of the estimated over 600 million people who have impairments in the world (ACFOA, 2002), 75% live in developing countries (Iemmi et al., 2013). 10-20% of the population of developing countries has an impairment [source: 10%: (WHO, 2011), 20%: (WB, 2012)]. However, if we consider social exclusion and discrimination people with impairments and their families face, the figures above will be even higher. At the same time 98% of disabled children in developing countries do not attend school or 40 million of the 115 million children who do not attend school have a disability/impairment (Kett, 2012) and among them most of the children suffers health problems from their early life. Disabled female children are less likely to attend school in comparison with disabled male children. Literacy rates for disabled individuals are as low as 3% globally (Blencowe et al., 2012). Again the Mortality rates for disabled children may be as high as 80% in countries where under-five mortality as a whole has decreased to below 20% (Trani & Cannings, 2013). 500,000 children every year are visually impaired due to vitamin A deficiency (Korani, Williams, Rose, & Khanna, 2015; Rahman and Sapkota, 2014). About 41 million babies are at risk of mental impairment due to lack of iodine in their mothers' diet (Li & Eastman, 2012). Nearly 70% of blindness and 50% of hearing impairment in children in developing countries is either preventable or treatable (WHO, 2011). More than 80% of the 50 million people affected by epilepsy live in developing countries.

Disabilities are a common finding in surveys in both developing and developed countries due to increasing amount of causes specially for malnutrition in their early ages (Mitra, Posarac, & Vick, 2013). The definition of disability has undergone dramatic development over the years. The Americans with Disabilities Act (ADA) (1990) defines “disability” as a physical impairment that substantially limits the life activities of such individual (Aziz et al., 2011). According to (WHO, 1980), in the context of health experience, a disability is any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being. But recently WHO (2007) refers that impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations. People with disability have been defined by the United Nations (UN) Convention as follows:

Persons with disabilities include those who have long-term physical, mental, intellectual, or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others (Leonardi, Bickenbach, Ustun, Kostanjsek, & Chatterji, 2006)

The inter relationship between nutrition and child development has been well prove. Several reports found nutrition variables were associated with screening positive for child disability (Hendricks, Lansford, Deater-Deckard, & Bornstein, 2014; McGillivray, McVilly, Skouteris, & Boganin, 2013). The percentage of interest of children screening gives positive impact to take the nutrition food item was larger with increasing severity of stunting and underweight. Reports shows that the children who were ever breastfed or who received vitamin A supplementation screened positive less frequently than their peers who had not breastfed or received vitamin A supplementation (West et al., 2011). Findings by the (WHO, 2011) the above argument to the important inter relation between child disability and nutrition, and an important target for interventions to prevent disability and improve quality of life of children with disabilities.

The history of the use of ICTs in disabilities is relatively short especially in developing country. Starting from the mid-nineties, the use of ICTs in disabilities rapidly expanded in developed nations through numerous ways for social developments (Mintz, Branch, March, & Lerman, 2012). A growing number of researchers began to develop theories and applications that used various tools and techniques to build competitive life compared to normal live (Lidström, Granlund, & Hemmingsson, 2012; Schreuer, Keter, & Sachs, 2014; Stendal, Balandin, & Molka-Danielsen, 2011). Disabled users due to malnutrition interact with technology in different ways and it is necessary to analyze their particular features in order to understand which access barriers have more impact in each case. Usually accessibility to the technology is appraised using the success criteria of the information technology accessibility guidelines (Fichten et al., 2014).

Due to facilities of information system and technology the functions of people with disabilities causes of malnutrition are improving at significant rate (Gardner, 2011) though access to technology is limited in many countries specially in developing nation like Bangladesh (Borg, Lindström, & Larsson, 2011). On the other hand teaching and learning programs have an assignment to train in the necessary knowledge, skills, and motivation to provide a bridge between disabilities and technology (Smith & Kelley, 2007). Mobile based nutrition systems offer the means for measuring food intake and energy expenditure as well as they provide constant communication and interaction in the form of personalized information exchange between the interested party and a professional adviser (Free et al., 2013). The process of developing some smartphone applications has raising young children's motivation in the improvement of their nutrition and physical activity (Erickson et al., 2014; Oncescu, O'Dell, & Erickson, 2013). The purpose of the applications was to enhance subjects' self-reflection on their physical activity and consumption of take-out foods (fast food), fruit, vegetables and sugar-sweetened drinks. There are many web-based nutrition diagnosis expert systems for dietetic professionals in the present technology based world

(Patel, Virparia, & Patel, 2012). This web based system assists in the nutrition-related decision making by generating a patient's nutrition diagnosis. On the other hand Applications belonging in Tele-nutrition research field are easy-to-use and cost-effective, as they enhance the adaption of long-lasting, self-monitoring health behavior change (Drigas & Karyotaki, 2013).

Bangladesh is a developing country located in South Asia and is home to approximately 154 million people (Hoque & Sorwar, 2014), underdeveloped and technologically backward countries in the world . It has been suffering from a various shortage of health workers, in terms of a shortage of qualification, an inappropriate skills and inequity in distribution in every government and non-government sector (S. M. Ahmed, Evans, Standing, & Mahmud, 2013). It is a country of widespread poverty, with approximately half of the total population living below the poverty line (Ali, Mujeri, & Ahmed, 2014) have been suffering inadequate health, education, and social security services, low employment and at high risk from natural disasters, particularly flooding. Estimates indicate that approximately 10% of the population i.e. 16 million people are living with a disability where Eighty-five percent of children with disabilities live in developing countries and these are one of the most vulnerable groups as they receive little (Maloni et al., 2010).

Information and communication technology plays a significant role in the dispensation of equal opportunities for removing malnutrition (Ntshephe, 2013). The obstacles to access to information of disabilities are eliminated by ways of certain tools and techniques of the technological infrastructure.

### 3. Methodology

This study has been conducted to identify the impact of the use of ICT on the disabilities reasoning for malnutrition of Bangladesh. This research paper is organized into following sections. We demonstrate the disability issues in Bangladesh due to malnutrition and the next shows the impact of ICT on disabilities related to malnutrition. However In this paper the research method conducted quantitative perspective. This section includes data sources, sample design, determination of sample size, questionnaire design, testing reliability of the questionnaire and data analysis.

#### 3.1. Data Sources

This study has been conducted among the impaired child in Bangladesh. Both primary and secondary data were collected for this study. Primary data were collected from the individuals' mother face to face interview by structured questionnaire form a reputed NGO operated region in Bangladesh, who has been giving ICT training and time to time information about health for last six years on providing proper information of malnutrition. And secondary data were collected from the books, journals, and other research reports. It was a cross-sectional survey. A total of 600 households were covered in the survey. Children aged 0-14 years having

disabilities due to malnutrition that were selected for interview. Normal children aged between 0-14 years were excluded. A sub-sample of 200 children was surveyed based on pre-structured variables. Data were collected between October and December 2014.

### 3.2. Sample Design and Determination of Sample Size

A cluster sampling method was used to identify the target population. Equal number of households from a reputed NGO operated region (150+150+150+150) were initially selected from the four districts; Jamalpur Sharpur, Rangpur and Nilphamar. Thus, a total of 600 households were selected from four regions. Regions were selected from the basis of NGO operation in each region at random, based on the household size of area.

A total of 200 respondents have been selected applying convenience sampling method from all four districts of Bangladesh regardless of their demographic profile. A structured, closed-ended questionnaire, having 20 questions, measured on five-point Likert scale (1 = strongly disagreed) to (5 = strongly agreed) has been used. Those variables are: low socioeconomic status, water source, lack of personal hygiene, lack of meat, lack of cow's milk consumption, maternal education, poor education of the mother, parents drug addiction, type of place of residence, live birth between births, underweight at birth, mother's age at birth, duration of breastfeeding, awareness of using ICT, available ICT infrastructure, focus on e-activities, mobile video communications (Ashraf, Mia, & Hasan, 2014), distance learning on nutrition, mobiles consultation on nutrition, using mobiles apps on health tips which were found from various relevant literature. Content validity has been judged by an expert. The variables are found to be correlated and thus it became necessary to reduce the number of variables. Factor analysis has been conducted using statistical tool SPSS and the overall measurement of the variables are calculated by using SPSS AMOS.

### 3.3. Test of Reliability

The reliability of the questionnaire has been tested by using Statistical Package for Social Sciences (SPSS) program. Table 1 shows the reliability coefficient of the questionnaire. It shows that the Cronbach's Alpha of the questionnaire is 0.738 where the number of case is 250 and measured items are 20 pre-defined structured questions which is in the acceptable limit as per (Numally, 1978). This means that the questionnaire used in this study is appropriate to conduct research and come to the conclusions.

## 4. Findings

Consider Null Hypothesis: All variables do not have positive correlation to each other.

Alternative Hypothesis: All variables do have positive correlation to each other.

Bartlett's test of sphericity has been used to test the null

hypotheses that the variables in the study are not correlated. In other words, the null hypothesis states that the population correlation matrix is an identity matrix. In an identity matrix, all the diagonal terms are 1 and all off-diagonal terms are 0. The test statistic for sphericity is based on a chi-square transformation of the determinant of the correlation matrix. A large value of the test statistic will favor the rejection of the null hypotheses. If this hypothesis cannot be rejected, the appropriateness of the factors will be questioned. Another useful statistic is the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy. This index compares the magnitudes of the observed correlation coefficients to the magnitudes of the partial correlation coefficients. Small values (below 0.5) of the KMO statistic indicate that the correlations between pairs of variables cannot be explained by other variables and that factor analysis may not be appropriate.

Table 1. KMO and Bartlett's Test.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.685
	Approx. Chi-Square	1247.498
Bartlett's Test of Sphericity	df	190
	Sig.	.000

Consequently, from the above table, it is apparent that factor analysis is appropriate. Here, the KMO value is 0.685, which is between 0.5 and 1.0, and the approximate chi-square statistic is 1247.498 with 190 degrees of freedom, which is significant at the 0.05 levels. Therefore, the null hypotheses can be rejected and the alternative hypotheses that all variables have a positive correlation to each other can be accepted. To analyze the variables, factor analysis has been used for data reduction. This analysis divulges the most important factors that contribute to the development of disable people.

The extracted six factors can be interpreted in terms of the variables that load high coefficients. From the rotated component matrix table, factor 1 has high coefficients for Type of place of residence (.830), Duration of breastfeeding (.673), Mother's age at birth (.617), Awareness of Using ICT (.474) and Available ICT infrastructure (.453). Thus, factor 1 can be entitled as "Consciousness factor of ICT as Assistive Tools of Nutrition" which is about 77% reliable. Factor 2 has high coefficients for Live birth between births (.940), Parents Drug Addiction (.595) and Lack of cow's milk consumption (.558). Hence, this can be tagged as "Behavior Based applications of New Born Health" and this factors approximately 74% reliable. Factor 3 has high coefficient for Low socioeconomic status (.886), Water Source (.677), Distance Learning on Nutrition (.356) and Mobiles Consultation on Nutrition (.313). Thus, this factor can be said as "Biological Nutrition of Mother" which satisfy nearly 63% reliability test. Factor 4 has high coefficients for Maternal education (.632), Poor education of the mother (.632), Lack of meat (.380) and Focus on e-activities (.344). So, this factor may be labeled as "Educational Betterment" and statistically 60% reliable. Again Factor 5 has very high coefficients for Lack of personal hygiene (.777) and Underweight at Birth

(.388). Therefore, this factor can be named “Hygienic Dietary” which satisfaction label is 55%. Finally factor 6 has coefficient for Using Mobiles Apps on Health Tips (.779) and Mobile video communications (.363). Therefore, this factor can be introduced “M-Nutrition” indicates about 47% reliability

Results also show that there are six impact factor and these total six factors have been revealed from the factor analysis, and they account as cumulative percentage is greater than 59% (see Table-3).

at the very next cell and eigenvalue is greater than 1.0 (it is recommended that factors with eigenvalues greater than 1.0 should be retained) that indicates the adequacy of the analysis using derived factors. As the factors are obtained from several types of socioeconomical, ICT and birth history variables, the obtained factors are quite theoretical in nature rather than practical to name. In the possible socio-economical/ health/ ICT variables determining malnutrition (see Table-3).

**Table 2.** Rotated Component Matrix.

<b>Rotated Factor Matrix<sup>a</sup></b>						
	<b>Factor</b>					
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>
Type of place of residence	<b>.830</b>	.067	-.014	.224	.118	-.007
Duration of breastfeeding	<b>.673</b>	.078	-.050	.036	.161	.025
Mother's age at birth	<b>.617</b>	.084	.087	.147	.368	-.059
Awareness of Using ICT	<b>.474</b>	-.011	.053	-.114	.397	.062
Available ICT infrastructure	<b>.453</b>	.027	.043	-.002	-.094	.130
Live birth between births	.039	<b>.940</b>	.118	-.018	.078	.062
Parents Drug Addiction	.002	<b>.595</b>	.093	.013	.126	.065
Lack of cow's milk consumption	.250	<b>.558</b>	-.021	.147	-.103	.100
Low socioeconomic status	.028	-.041	<b>.886</b>	.066	-.052	-.046
Water Source	.103	.003	<b>.677</b>	.232	-.008	.057
Distance Learning on Nutrition	.000	.204	<b>.356</b>	-.011	-.086	-.075
Mobiles Consultation on Nutrition	-.128	.148	<b>.313</b>	.120	.030	.163
Maternal education	.081	.052	.036	<b>.632</b>	.163	.067
Poor education of the mother	.088	-.047	.156	<b>.632</b>	-.104	.065
Lack of meat	.040	.015	.334	<b>.380</b>	.197	.029
Focus on e-activities	.028	.216	.122	<b>.344</b>	.029	.191
Lack of personal hygiene	.137	.057	-.069	.101	<b>.777</b>	-.006
Underweight at Birth	.327	.069	-.064	.088	<b>.388</b>	.040
Using Mobiles Apps on Health Tips	.080	.067	.039	.009	.041	<b>.779</b>
Mobile video communications	.053	.071	-.025	.167	-.010	<b>.363</b>
Cronbach's Alpha	<b>0.767</b>	<b>0.736</b>	<b>0.627</b>	<b>0.605</b>	<b>0.553</b>	<b>0.466</b>
No. of Measured Items	5	3	4	4	2	2
Extraction Method: Principal Axis Factoring.						
Rotation Method: Varimax with Kaiser Normalization.						
a. Rotation converged in 7 iterations.						

**Table 3.** Total Variance Explained.

Total Variance Explained									
Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.644	18.221	18.221	3.161	15.806	15.806	2.196	10.979	10.979
2	2.443	12.215	30.436	1.942	9.711	25.518	1.703	8.517	19.496
3	1.859	9.296	39.732	1.478	7.389	32.907	1.668	8.341	27.838
4	1.476	7.381	47.114	.931	4.655	37.562	1.288	6.441	34.279
5	1.306	6.528	53.642	.781	3.907	41.469	1.220	6.099	40.378
6	1.154	5.772	59.414	.649	3.247	44.716	.868	4.338	44.716
Extraction Method: Principal Axis Factoring.									

### Structural Equation Modeling

We consider test the model fitness by performing a Confirmatory Factor Analysis (CFA) on the survey data set. The results performed that the conceptual model is recursive. Table 4 indicates that the all fit index are giving excellent result for acceptance of the model without CFI. But the CFI is in the acceptable position. On the other hand the most acceptance of the model validity is CMIN/ degrees of freedom which indicates 2.323 which is less than 3.00 at the probability value (<0.0005) and the RMSEA gives 0.073

which lies between the acceptance limit.

Table 5: indicates that when when F1 goes up by 1, ICT infrastructure goes up by 1 that means regression weight was fixed at 1.000, may not estimate. On the other hand the probability of getting a critical ratio as large as 4.994 in absolute value is less than 0.001 for the variables ICT awareness. In other words, the regression weight for F1 in the prediction of ICT Awareness is significantly different from zero at the 0.001 level (two-tailed). For the question of the distance learning by mobile phone does not gives significant

result in our study and result (Table 5) shows that the regression weight estimate is 3.114 standard errors above zero. Without that all the variables in the study gives a significant result and the P values indicates significance at the level of 99% confidence interval. Again we see that When F4 goes up by 1, Maternal Education goes up by 1.516 (estimated) and it has a very much positive correlation which indicates nearly 83% to the nutrition of the children and from here we may conclude that maternal education is very much important in the time of pregnancy period. Mother age in the first birth and difference between two birth (Time period) and also the types of residence is the most important theme for the nutrition of the children. Result shows (Figure 1) 72% variability in the mother's age and 91% variability to the birth between the birth and 85% variability for the types of residence. On the other hand video communication by smart

phone and various types of Apps in the smart phone helps to learn the above concerned topics. Which has a big impact to learn and implement to the early aged children. So ICT helps to improve the malnutrition who are use to the ICT like TV program and online consultation by using mobile network.

Table 4. Model fit Table of Figure 1.

Fit Index	Recommended Value	Observed Value
CMIN/ degrees of freedom	$\leq 3.00$	2.323
GFI	$\geq 0.90$	0.912
AGFI	$\geq 0.80$	0.834
NFI	$\geq 0.90$	0.907
CFI	$\geq 0.90$	0.884
RMSEA	$\leq 0.06$ OR $\leq 0.08$	0.073

GFI = goodness-of-fit index; NNFI = non-normed fit index; CFI = comparative fit index; RMSEA = root mean square error of approximation.

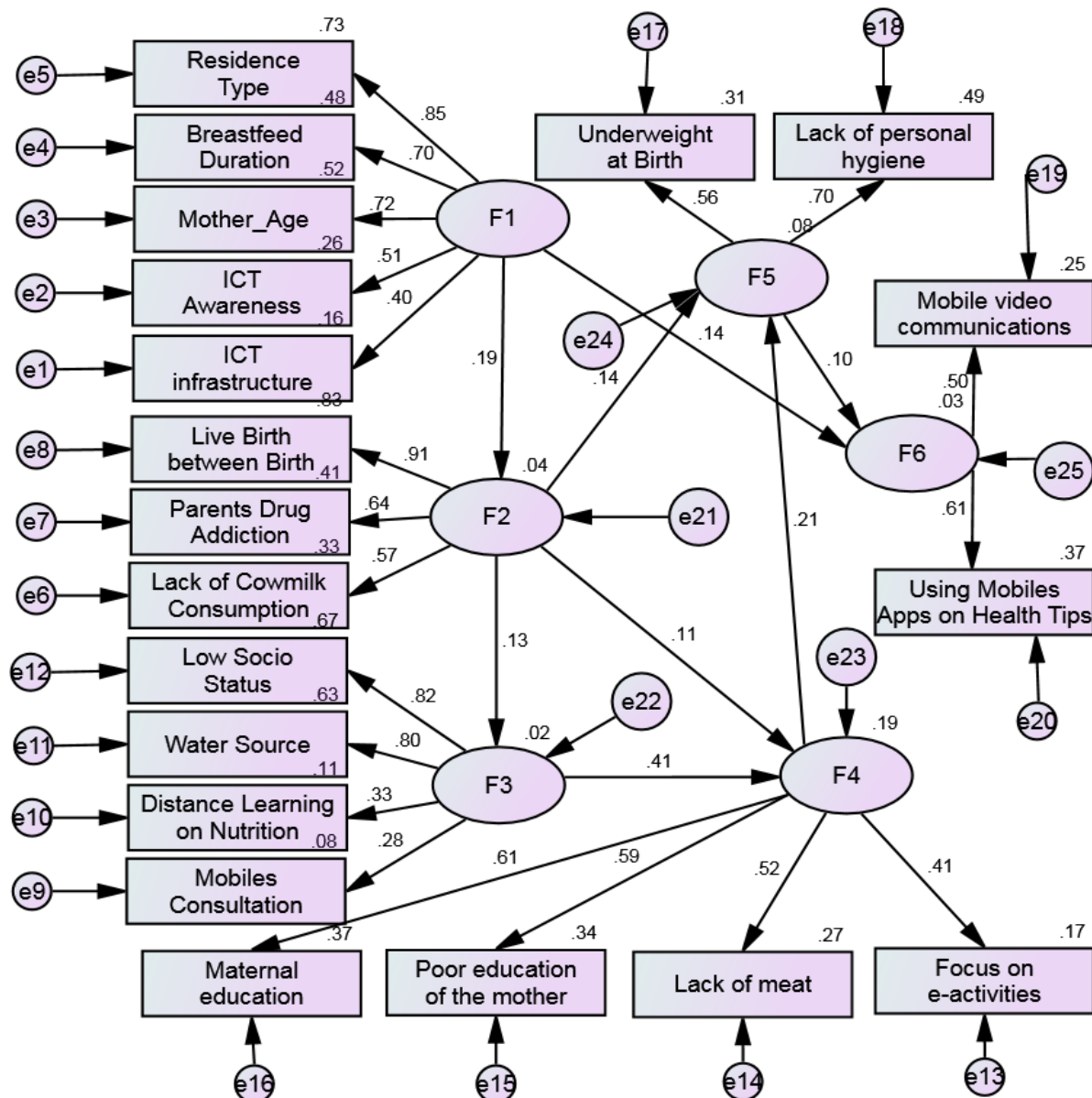


Figure 1. Path Diagram 1.

*Table 5. Reliability of parameter estimates.*

Regression Weights:			Squared Multiple Correlations				
			Estimate	S.E.	C.R.	P	Estimate
ICT_infrastructure	<---	F1	1.000				.156
ICT_Awareness	<---	F1	1.242	.249	4.994	***	.259
Mother_Age	<---	F1	1.689	.297	5.679	***	.520
Breastfeed_Duration	<---	F1	1.659	.295	5.621	***	.483
Residence_Type	<---	F1	2.089	.357	5.845	***	.731
Lack_Cowmilk	<---	F2	1.000				.330
Parents_Drug_Addic	<---	F2	1.157	.149	7.773	***	.415
Live_Birth_bet_Birth	<---	F2	1.589	.222	7.146	***	.833
Mobiles_Consultation	<---	F3	1.000				.077
Distance_Learn_Nutrition	<---	F3	.925	.297	3.114	.002	.106
Water_Source	<---	F3	2.309	.594	3.886	***	.634
Low_Socio_Status	<---	F3	2.957	.764	3.871	***	.671
Maternal_Edu	<---	F4	1.516	.331	4.579	***	.374
Underweight_Birth	<---	F5	1.000				.314
Lack_Per_Hyg	<---	F5	.976	.448	2.180	.029	.486
Mobile_communications	<---	F6	1.000				.246
Use_Mobiles_Apps	<---	F6	1.306	1.175	1.112	.266	.373
e_activities	<---	F4	1.000				.172
Mother_Poor_Edu	<---	F4	1.548	.341	4.541	***	.345
Lack_Meat	<---	F4	1.237	.284	4.363	***	.268

It is estimated that the predictors of Live Birth between Births explain 83.3 percent of its variance which means the error variance of Live Birth between Births is approximately 16.7 percent of the variance of Live Birth between Births itself and the error variance of Residence Type is approximately 26.9 percent of the variance of Residence Type itself. Again Low Socioeconomic Status explain 67.1 percent of its variance and the error variance of Mother's Age is approximately 48 percent of the variance of Mother's Age itself. Where It is estimated that the predictors of Breastfeed Duration explain 48.3 percent of its variance.

## 5. Discussion

This paper has addressed the impact of ICT in the lives of impaired people who suffer from malnutrition. The estimates show that those individuals with a disability are used to the ICT from different perspective, they should used to mobile based consultation because result shows it helps to the impaired children to solve their instant problems. On the other hand if the problems are very hard then the individuals may access to the video communication. So use of mobile phone and gives awareness of ICT might be a sign of solving disabilities quick problems solve.

Today's society must be educated. It is necessary to use maternal education and also the mother's educational level should be high. Because if they are educated they can focus on electronic activity like web searching and so on and by this they can take decision when she has scarcely access to the patient in emergency time. So mother's education level and the maternal period knowledge is very important thus ICT helps to improve the awareness of nutrition. Results indicate that a sensitive approach of education might create learning materials that can help these people to gain skills and find application in the maternal period. Although the

creation of educative program in web for people with disability is challenging we hope to help in their learning as well as in their better inclusion in society. This study provides deeper knowledge and understanding of the people with malnutrition in Bangladesh and their experiences of everyday activities in relation to support of the awareness of the birth between births and how ICT is gradually changing their way of lives it can be observed by the information of the distance learning program.

The application of ICT is very important as it plays an essential role in supporting malnutrition children by offering for alternative means of communication, providing mobile consultation. Otherwise the socioeconomic condition and the source of the food also have a grate factor to enhance nutritionist society. Inclusive distance learning training, with access to easy mobile communication in various social development organizations, provides the best opportunity for the majority people with malnutrition to improve the situation in rural areas.

The digital divide in disadvantaged communities especially people with physical impairment requires adequate knowledge of the underlying causes of the divide, a favorable Government policy, a focus on the benefits of providing ICT, the provision of suitable infrastructure, and a committed management that is prepared to get round the various barriers or risks found in disadvantaged communities. Extensive ICT development and society's capacity to embrace technological change mean that people with impairment can participate in social development (Tilley, Bruce, & Hallam, 2009). So both the government and non-government organization should come forward to accelerate development of ICT and enhance the society's capability specially people with physical impairment to adapt with the technological change which will ultimately provide a greater benefits to the country.



## 6. Summary, Limitations and Future Research

ICT brings a ground breaking change in the lives of impaired children through enabling them to do almost all types of works and contribute to the society having proper nutrition. Despite of all determinants and differentials of malnutrition, consciousness plays the most important role. Almost all of the previous studies conclude about consciousness, as the main differential of child nutritional status with the help of ICT, these types of children are getting healthy and proving talents in their respective daily life. Education builds this consciousness among mothers, which increases the mothers and child health care seeking behavior. In response to the question of which malnutrition children would like to do in the future, all respondents stated, would like to work with technology for the development of the country and rise of women education is necessary in the way to overcome it.. The involvement of these types of children in mainstream development will help Bangladesh to achieve its mission of upgrading from developing to middle income country by 2021.

A major limitation of this study is the small sample and all respondents were from only from four district. It would be important to expand the research to incorporate representatives from all sectors of the Bangladeshi society who are likely to attain self-dependency with the help of ICT. It would be useful to expand the research to include larger sample size and within wider areas to incorporate a better view of the sector. Government policies and programs related to promote ICT Bangladesh are other research areas that would contribute to knowledge in this critical area. The insights reported in this paper could provide useful input from a user perspective to do further quantitative research in the area using the reported indicators.

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