Chapter 4

Evaluation of a Nutrition Programme: Participation and Health Effects

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Abstract

This study evaluates a nutrition programme in a rural area of South Africa. It examines the factors that determine the participation of the families involved in the educational part of the programme, and the effects of the nutrition part of the programme on the weight, health and developmental condition of the participating children. Interviews were done using a self-constructed questionnaire based on Ajzen's model of planned behaviour (1988). Kitchen scales were used to establish the children's weight and two screening checklists - the TQ and the ADLQ - to measure the health and developmental status of the children. The family's a priori attitude towards participation and the perceived ease (or difficulty) of participation in the nutrition programme were found to affect participation. After completion of the programme, 57% of the children had a weight above the 3rd percentile of the age growth curve. Following completion of the programme, the problems most frequently mentioned were the child still appearing backward and slow, speech problems and delayed motor development. Very few functional problems were found to occur after completion of the programme.

1. Introduction

1.1. Ndlovu Medical Centre

In 1994, Ndlovu Medical Centre (NMC) was established in Elandsdoorn, a township in Moutse, Mpumalanga, South Africa. The population of Elandsdoorn has been estimated at 30,000 - 40,000 people. Within a 10-km radius of Elandsdoorn, there are many other townships which can benefit from the NMC services, which brings the population reach to some 120,000. The founding of the centre was a private initiative. In addition to the provision of medical care for the surrounding townships, the centre was also established to contribute to the overall development of the area. The NMC provides medical care and community health

services. The spacious clinic includes a pharmacy, five consultation rooms, a basic laboratory, an outpatient operating room, an X-ray section, an ultrasound division, a fourteen-bed maternity unit and its own ambulance. The clinic has been registered with the Department of Health, Mpumalanga, as a private hospital with maternity unit attached. Currently, an AIDS awareness programme, a TB programme and six nutrition units are operating under the auspices of the NMC. Four pre-schools, a bakery, postal services, sports facilities and a day care centre for the elderly have also been built.

1.2. Ndlovu Nutritional Unit

Many children with acute medical problems stemming from malnutrition are seen at the NMC. Malnutrition is poor nutritional status due to either an insufficient or poorly balanced diet and/or the inadequate absorption/utilisation of nutrients (Hansen & Bac, 1991). Clearly malnourished children brought to the NMC together with their caregivers were invited to participate in an educational nutrition programme for the feeding of the children. The caregivers followed a training to learn to provide healthy nourishment for their children.

The conduct of the nutrition programme was facilitated with the establishment of six nutrition units. The first nutrition unit was built next to the NMC in Elandsdoorn in 1996. Subsequently, four satellite units were opened in the townships near Elandsdoorn. Each of the nutrition units is equipped with its own water supply to maintain the unit's gardens and provide taps for community use.

The primary aim of the nutrition programme is to rapidly improve the participating children's health status by providing balanced and nutritious meals. The children remain in the programme until they stabilise above the 3rd percentile on the age growth curve. To improve the family's food chain and socio-hygienic status without a major economic investment, the caregivers are trained to establish a home vegetable garden. The caregivers are provided with seeds and a gardening tool set in order to start their own vegetable gardens. Lectures are also given on the topics of sanitation, hygiene, health and the prevention of disease.

The nutrition units are operated by well-trained community health workers (CHWs). The caregivers and the children visit the unit three times a week for a period of 4-6 six months. On the other two days, the CHWs make home visits in order to assist with around-the-house improvements and monitor the progress being made with respect to the home garden.

After six years of operation, it was decided that the Ndlovu Nutritional Unit (NNU) should be evaluated. Given that this was the first evaluation, it was decided to examine two

basic aspects of the programme. First, the factors determining the caregivers participation in the programme were examined. Second, the effects of the programme with respect to the growth and particularly the weight, health and developmental condition of the children participating in the programme were examined. The condition of the home vegetable gardens, the nature of the home environment and the socio-economic status of the families were also examined as part of the evaluation study[1]. All of the information gathered as part of the evaluation study was also supplied to the NNU. Both participants discharged by the doctor and participants that had left the programme prematurely were included in the evaluation study.

In sum, the following two questions were addressed in this research:

1. *Which factors determine participation in the educational part of the nutrition programme?*
2. *What are the effects of the nutrition part of the programme on the growth and particularly the weight, health and developmental condition of the children following participation?*

1.3. Nutrition and Growth

'The World Health Organization estimates that half the world's children are underweight or stunted. In South Africa, the prevalence of children with low weight for age varies from 13 percent in some urban areas to as high as 60 percent in specific rural environments. Children are particularly vulnerable to nutritional inadequacies because of their rapid growth, their dependence on others and their increasing exposure to various environmental hazards' (WHO, 2000; p. 224). More than half of all child deaths are associated with malnutrition, which weakens the body's resistance to illness. Poor diet, frequent illness and inadequate care of young children can lead to malnutrition. In addition, malnutrition during the first two years of life slows down a child's physical and mental growth. And such delays cannot be rectified as the child grows older, which means that the impact of such is likely to be lifelong (Tershakovec & Stallings, 1998).

Examples of the nutrients which children need are vitamin A, iron and iodine. Children need vitamin A to resist illness and prevent visual impairments. Vitamin A can be found in many fruits and vegetables, oils, eggs, dairy products, fortified foods, breast milk and vitamin supplements (Brainbridge & Tsang, 1995; WHO, 2002). Children need iron-rich foods to protect their physical and mental abilities. Iron is found in liver, lean meats, eggs, pulses and green vegetables (Lloyd & Filer, 1995). If a child does not receive sufficient iodine, the child is likely to develop mental, hearing or speech disabilities and may also experience delayed physical or mental development (WHO, 2000).

According to Hansen and Bac (1991), the most common form of malnutrition in childhood is protein energy malnutrition (PEM). The mildest and most prevalent category of PEM is the underweight or stunted child. The only sign of mild PEM is inadequate weight and/or height gain. While the exact effects of infant and child malnutrition have yet to be specified, increased morbidity and comprised development are clearly a consequence of early malnutrition. Early identification enables early intervention and the prevention of more serious complications.

For children, a balanced diet with different types of foods containing different nutrients is needed. Children require many nutrients to grow and protect themselves against disease (International College Group, 1999).

1.4. The Model of Planned Behaviour

In order to examine the factors that determine the participation of the families in the nutrition programme, use was made of the model of 'planned behaviour' originally put forth by Ajzen (1988) to explain social behaviour. In the model of planned behaviour, the following three factors are assumed to shape the intention towards a particular social behaviour:

- The individual's *attitude* towards the behaviour (i.e. the individual's positive or negative evaluation of participation in the nutrition programme).
- The presence of a *subjective norm* (i.e. the perception of social pressure to either participate or not participate in the nutrition programme).
- *Perceived behavioural control* (i.e. the perceived ease or difficulty of participation in the programme). This determinant is assumed to reflect both past experiences and anticipated impediments or obstacles.

The three aforementioned factors are assumed to influence an individual's *intentions* with regard to a particular *social behaviour*, in this case participation in the nutrition programme. Intentions can predict a variety of action tendencies and thus constitute the antecedents to overt action. Intentions can also change over time, which means that the accuracy of prediction decreases as the interval between measurement of intention and observation of actual behaviour increases. The individual's intention to either perform or not perform a particular behaviour nevertheless remains the immediate determinant of behaviour, as depicted in Figure 1 (Ajzen, 1988; Ajzen & Fishbein, 1980).

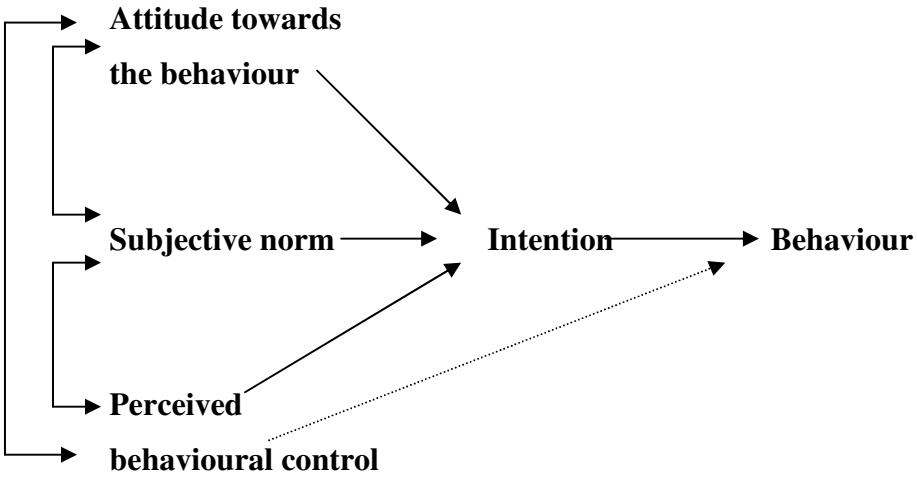


Figure 1: The model of planned behaviour (Ajzen, 1988, p. 133)

1.5. Early Detection of Developmental Disorders in Third World Counries

Early detection of developmental disorders is secondary prevention. 'It is believed that early intervention of children will help to prevent the occurrence of disabilities and handicaps as well as promote positive outcomes such as sustained parental involvement in their child's development and better future social outcomes' (Thorburn, 1993, p. 4). Early detection requires recognition of the evidence or signs that something is going wrong in a child's development. Early detection requires suspicion of a problem followed by identification of the impairment or disability. For instance, early detection of a hearing impairment is important as such an impairment is known to increase the probability of speech and cognitive disabilities. With the early detection of functional disabilities or the emergence of functional disabilities, later developmental delays can be prevented. Early detection can be fostered by the promotion of early recognition on the part of parents, the development of risk registers, the monitoring of selected children, the conduct of community surveys, early referral from key informants and screening. Screening involves all young children as it is aimed at the detection of a condition before it is symptomatic, the identification of cases which have not been presented at health facilities and the monitoring of children at risk for developmental disorders.

In many third world countries, intervention programmes are simply not available and early detection is therefore of little or no use. The relevance of early detection for the present research is to obtain an impression of the health and development of the children who

participated in the nutrition programme and then use this information for the improvement of the nutrition programme.

2. Methods

2.1. Subjects

The subject population consists of 166 families participating in the nutrition programme during the period 1996-2002. Those families who participated in 1998 were not included because the names and addresses of these families were not recorded in that year. Each family consisted of the combination of a caregiver and a child, although a caregiver could have more than one child participating in the programme or participate on two different occasions. In both instances, the different cases of participation were treated separately. A total of 101 families (61%) did not participate in the study. Of 52 of these families (31%) only the names were registered, not the addresses. The other 49 families (29%) could not be interviewed because they had moved to another place (N=14), worked many miles away (N=12), could not be found (N=10), were facing difficult family circumstances (N=5), the caregiver(s) had passed away (N=4), or they were not in the programme for a sufficient period of time (N=4). In the end, 65 families (39%) participated in the study.

All of the participating families lived in rural townships around Elandsdoorn. The most pervasive problems in these areas are poverty, lack of water, lack of electricity, unemployment and crime. The caregivers were mostly the children's mothers (75%), grandmothers (22%) or aunts (3%). The children were between the ages of 1 and 9 years, with an average of 5 years; 60% were boys and 40% were girls.

2.2. Procedure

The names and addresses of families that had completed the nutrition programme during the period 1996-2002 were retrieved from the administrative files of the nutrition units. Those families selected for inclusion in the present study were subsequently visited for an interview in 2002, without being informed in advance. People in the township areas of interest do not have telephones and very few have a post office box. All the families agreed to participate despite not being informed in advance.

A structured questionnaire and two screening checklists were administered during the interview, and the child or children participating in the study were then weighed using

kitchen scales. Given that the people in this area speak Zulu, Northern-Sotho or Ndebele, a translator was present at all the interviews.

2.3. Instruments

The instruments used in this study consisted of a self-developed structured questionnaire and two screening checklists commonly used to establish the health and developmental status of children in developing countries (Thorburn, 1993): the Ten Questions Screen (TQ) and the Activities of Daily Living Questionnaire (ADLQ).

A *structured questionnaire* based on Ajzen's model of planned behaviour (1988) was constructed with the help of the NMC professionals, including a medical doctor and five community healthcare workers from the nutrition unit. Six pilot interviews were conducted, and the questionnaire was adjusted as needed. The questionnaire covers the five factors constituting the planned behaviour model:

- twelve questions address the factor 'attitude';
- four questions address 'subjective norm;
- four questions address 'perceived behavioural control';
- three questions address 'intention';
- five questions address 'behaviour'. All questions are responded to along a three-point scale ('Yes – I don't know – No').

The *TQ* is a sensitive and valid tool for the detection of health problems in children between the ages of 2 and 9 years (Thorburn & Marfo, 1994; Thorburn, 1995). The TQ consists of ten questions with a yes-no format and is intended for administration to mothers by community health workers. The questions concern the child's vision, hearing, movement and cognitive abilities. The minimum score is 0, indicating no health problems; the maximum score is 10, indicating multiple health problems.

The *ADLQ* has been developed to screen children in developing countries from the age of 2 years for developmental (i.e. functional) disabilities. The ADLQ consists of nineteen questions with a 'yes-no-not applicable' response format. 'Not applicable' means that the child is too young to do the daily activity on his own. And if the child is found to have a movement disability, there are two additional questions. The minimum score of 0 indicates no functional disabilities, and the maximum score of 21 indicates functional disabilities in all domains of daily life. The ADLQ has proved to be sensitive to the presence, absence and severity of disability in children in developing countries. The checklist screens for motor,

self-help, communication, cognitive and social development problems (Thorburn, Desai & Davidson, 1992; Thorburn, 1995).

The screening checklists were not used on five occasions: twice because the children were too young; twice because the children had passed away; and once because the child was no longer living with the caregiver.

2.4. Statistics

The design of this research is partly a retrospective survey and partly a retrospective pre-experimental intervention study. The families were interviewed on one occasion as no assessment prior to participation in the nutrition programme occurred.

Structural Equations Modelling (SEM) was used to analyse the questionnaire data (Arbucle, 1997). SEM is a method which uses the paths between the variables in a model to define their relations. SEM calculates the regression weights and covariances between the different variables in a model. The model as a whole is used to calculate the regression weights and covariances (Hox, 1999). The answers to eight of the questions from the questionnaire were re-coded because they were posed in a negative manner. After re-coding, various indices were calculated on the basis of the questions concerned with the same variable. A significance level of 0.05 was used to evaluate the relations between the different variables in the model developed by Ajzen (1988).

The analyses of the TQ and ADLQ data involved calculation of the percentage problems revealed by each screening checklist. Three of the items from the TQ were re-coded as they were posed in a positive direction while the other seven items were posed in a negative direction.

3. Results

3.1. Factors Determining the Caregivers' Participation in the Educational Part of the Nutrition Programme

The relations between the factors in the planned behaviour model were examined in a regression analysis. The regression weights for the relations between attitude, subjective norm, perceived behavioural control, intention and behaviour are presented in Table 1. As can be seen, the relation between perceived behavioural control and actual behaviour proved significant. Similarly, the relation between attitude towards the behaviour and the behaviour proved significant.

Table 1: Relations between independent variables (attitude, subjective norm, perceived behavioural control), the intermediate variable (intention) and the dependent variable (behaviour)

			B	p	Beta
intention	-	attitude	1.40	0.06	0.24
intention	-	subjective norm	0.37	0.11	0.19
intention	-	perceived behavioural control	-0.04	0.91	-0.01
behaviour	-	intention	-0.03	0.42	-0.09
behaviour	-	perceived behavioural control	0.37	**0.00**	0.40
behaviour	-	attitude	0.57	**0.01**	0.32

B = regression weights or path coefficients
Beta = standardised coefficients

In Table 2, the covariance of the relationships between the independent variables (attitude, subjective norm and perceived behavioural control) are presented. As can be seen, the relation between attitude and perceived behavioural control is significant.

Table 2: Relations between the independent variables

			B	p	Beta
subjective norm	-	perceived behavioural control	0.02	0.31	0.13
subjective norm	-	attitude	0.01	0.47	0.09
attitude	-	perceived behavioural control	0.02	**0.01**	0.37

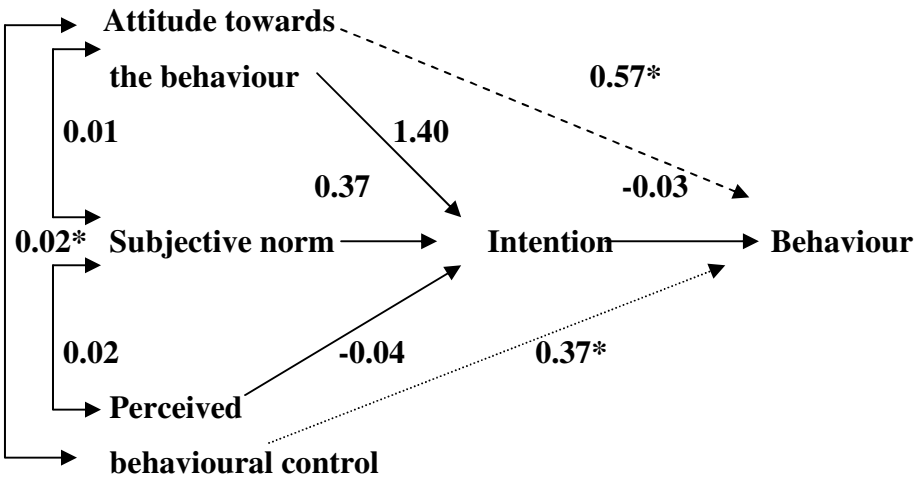
B = covariances
Beta = correlation coefficients or standardised coefficients

Structural Equation Modelling has been used to evaluate the goodness of fit of the model to the data. The goodness of fit is indicated by the:

(a) χ^2-value, which indicates whether or not the pattern of path coefficients and covariances in the data can be explained by the model, with lower values indicating better fit (N.B. this is not the most informative index, because it is influenced by the sample size);
(b) the Normal Fit Index (NFI) which is a measure of complete covariation in the data, with values exceeding 0.90 indicating an acceptable fit; and
(c) the Root Mean Square Error of Approximation (RMSEA), which is a measure for assessing models of differing complexity, with values smaller than 0.05 indicating an acceptable fit.

For the model used, the following results were found: χ^2 (1) = 0.139, p = 0.71, NFI = 1.0, RMSEA = 0.00, all indicating that the model fits in with the data very well.

In Figure 2, the data from Tables 1 and 2 have been incorporated into the model of planned behaviour. In contrast to Ajzen's model (1988), attitude towards a particular behaviour was found to significantly influence behaviour.



* is significant with $p<0.05$

Figure 2: Path coefficients for the factors in the model of planned behaviour

The Squared Multiple Correlations (SMC) indicate what percentage of variation in the dependent variables can be explained by the linear model. For the model used, the following results were found: the SMC for Intention is 0.01, indicating that 1% of the variation in scores on Intention is explained by the model; the SMC for Behaviour is 0.34, indicating that 34% of the variation in scores on Behaviour can be explained by the model. This indicates that the model can better explain Behaviour than Intention.

3.2. Effects of the Nutrition Part of the Programme on Weight, Health and Functional Development

The *weight* results, expressed as the children's position on the age growth curves following participation in the nutrition programme, are presented in Table 3. As can be seen, the weight of nine of the children (or 13.8%) could not be established for various reasons. According to Bilo and Voorhoeve (1990), the normal growth figures lie between the 10^{th} and 90^{th} percentiles. For a developing country, the lower weight limit was set at the 3^{rd} percentile and 57.1% of the children were found to weigh between the 3^{rd} and 50^{th} percentiles following participation in the programme, which means that their weight was 'low-to-normal'. The weight of the remaining 42.9% of the children remained 'below normal.'

Table 3: Position of children on age growth curves for weight following participation in the nutrition part of the programme

	N	%	valid %	cumulative %
weight below 3rd percentile	24	36.9	42.9	42.9
weight between 3rd and 50th percentiles	32	49.2	57.1	100.0
missing	9	13.8		
total	65	100.0		

Table 4 shows the TQ results regarding the children's *health and developmental status*. The most frequently occurring problem was the child still appearing 'backward or slow' when compared to other children of the same age. The second most frequently occurring problem were speech problems. Delayed motor function (i.e. problems in sitting, standing and/or walking) was the third most frequently occurring problem.

Table 4: TQ results regarding health problems following participation in the nutrition part of the programme

		yes	no	Total
delay motor function	Count	11	49	60
	%	18,3%	81,7%	100,0%
diffuculty seeing	Count	6	54	60
	%	10,0%	90,0%	100,0%
difficulty hearing	Count	7	53	60
	%	11,7%	88,3%	100,0%
does not understand saying	Count	3	57	60
	%	5,0%	95,0%	100,0%
weakness in limbs	Count	8	52	60
	%	13,3%	86,7%	100,0%
fits or faint	Count	2	58	60
	%	3,3%	96,7%	100,0%
does not learn to do things	Count	4	56	60
	%	6,7%	93,3%	100,0%
does not speak	Count	4	56	60
	%	6,7%	93,3%	100,0%
speech different	Count	12	48	60
	%	20,0%	80,0%	100,0%
backward or slow	Count	16	44	60
	%	26,7%	73,3%	100,0%

In Table 5, the ADLQ results regarding *functional disabilities* are presented. As can be seen, very few problems with respect to the performance of various functional tasks are encountered. The only possible exception is washing and bathing without help.

Table 5: ADLQ results regarding functional disabilities following participation in the nutrition part of the programme

		yes	no	not applicable	Total
gets up from lying	Count	60			60
	%	100,0%			100,0%
moves both arms	Count	58	2		60
	%	96,7%	3,3%		100,0%
moves both legs	Count	58	2		60
	%	96,7%	3,3%		100,0%
moves round house	Count	59	1		60
	%	98,3%	1,7%		100,0%
eats and drinks	Count	58	1	1	60
	%	96,7%	1,7%	1,7%	100,0%
washes and bathes	Count	17	14	29	60
	%	28,3%	23,3%	48,3%	100,0%
cleans teeth	Count	44	4	12	60
	%	73,3%	6,7%	20,0%	100,0%
uses toilet	Count	46	5	9	60
	%	76,7%	8,3%	15,0%	100,0%
dresses	Count	38	2	20	60
	%	63,3%	3,3%	33,3%	100,0%
understands speech	Count	57	3		60
	%	95,0%	5,0%		100,0%
expresses thoughts	Count	58	2		60
	%	96,7%	3,3%		100,0%
others understand	Count	54	2	4	60
	%	90,0%	3,3%	6,7%	100,0%
plays	Count	58	2		60
	%	96,7%	3,3%		100,0%
school	Count	11	2	47	60
	%	18,3%	3,3%	78,3%	100,0%
familie activities	Count	51	4	5	60
	%	85,0%	6,7%	8,3%	100,0%
moves in community	Count	48	1	11	60
	%	80,0%	1,7%	18,3%	100,0%
community activities	Count	38		22	60
	%	63,3%		36,7%	100,0%
household tasks	Count	21		39	60
	%	35,0%		65,0%	100,0%
works	Count			60	60
	%			100,0%	100,0%

4. Conclusions and Discussion

4.1. Methodological Issues

It has to be realised that the research took place in a township area in a developing country. All kind of methodological difficulties in carrying out the planned evaluation research have been met and practical solutions had to be found. This could affect the validity of the results and the applicability of the findings to other settings. It has been tried to cope with these constraints and to carry out the research optimally in a situation where no research has been done up till now.

Of the participants, 39% were surveyed. 61% did not participate in the study for all kind of external reasons, e.g. they had moved to another place, could not be found, caregivers had passed away. There are no indications that these persons differ meaningfully from those who were interviewed. At the time they took part in the nutrition programme, they lived in the same area, were in similar socio-economic situations, had the same difficult family circumstances and similar numbers of caregivers passed away compared to those who took part in the study.

A retrospective survey of participants up to six years after completion of the nutrition programme may affect the reliability of the outcomes. To this end, correlations were calculated between the first cohorts (1996+1997) and the last cohorts (2001+2002). An effect of time could not be established.

The assessment of the programme's effects on growth, health and development were established by means of a pre-experimental design, viz. without a meaningful comparison group. The status of current nutrition and development could have changed during or after participation in the programme as a result of changes in food supply or other extraneous factors. Based on descriptions of the family and environmental circumstances in the medical files of the NMC, it could be stated that no big changes in these circumstances took place over time.

A final limitation on this study may have been the need to use a translator. The use of a translator for the questions asked and the answers given may have influenced the reliability of the present results. We tried to minimise the problem of interpretation to the greatest extent possible by training the translators before the interview and providing strict instructions.

4.2. Factors Determining Participation in the Educational Part of the Nutrition Programme

The first aim of this study was to examine the factors which appear to determine the participation of families in the educational part of a nutrition programme (i.e. behaviour). The factors 'attitude' and 'perceived behavioural control' were indeed found to significantly influence participation. In contrast, 'subjective norm' and 'intention' did not appear to influence the participation of the families in the programme. In other words, the decisions of the families to participate in the programme (or not) were not influenced by other people in their environment. Similarly, the factor 'intention' did not influence their participation. However, the a priori positive or negative family evaluations of participation in the programme and the perceived ease (or difficulty) of participation did affect their actual participation.

According to Ajzen's model of planned behaviour, 'intention' should have been the main predictor of 'behaviour'. This was not found to be the case in this study. One possible explanation may lie in the length of time between the measurement of intention and the measurement of actual behaviour. As already noted, the longer the interval between the measurement of intention and the performance of the target behaviour, the lower the predictive value of intention. When the correlations between intention and behaviour for the first cohorts (1996+1997) and the last cohorts (2001+2002) were compared, however, an effect of time on the relations between 'intention' and 'actual behaviour' was not detected. An explanation for the discrepancy between the suppositions of the model and the results of this study may lie in the fact that Ajzen's model is a typically Western model in which people basically 'do what they intend to do'. It could be that in the African situation other factors, such as personal and cultural characteristics, determine behaviour to a higher extent.

4.3. Effects of the Nutrition Part of the Programme on Weight, Health and Functional Development

The second aim of this study was to evaluate the growth, health and developmental condition of the children following participation in the nutrition part of the programme. As already noted, 57% of the children had gained weight to above the 3rd percentile of the age growth curves, while 43% of the children remained below the 3rd percentile and were therefore still underweight.

The TQ results showed that the main health problem following participation in the nutrition programme was that the child appeared to be backward or slow. This may be due to

a lack of iron-rich foods and iodine (WHO, 2000; Lloyd & Filer, 1995). Speech problems were also mentioned fairly frequently, which may be due to a lack of iodine (WHO, 2000). Delayed motor function is probably due to a shortage of iron and iodine (WHO, 2000; Lloyd & Filer, 1995). Further research into the composition of the food in the area of the research is needed to verify this supposition. The established health problems may also be a result of a lack of environmental stimulation. For instance, there is a lack of any stimulation of play and movement activities in the township area.

The results of the present study show that growth delays still prevail - despite the operation of a nutrition programme - and influence the health of children in a negative manner. Just how long the children were malnourished prior to participation in the programme is unknown. As already pointed out, severe undernourishment during the first years of life can damage the development of children irreparably (Tershakovec & Stallings, 1998). A poor nutrition regime and the presence of disease *after* completion of the programme may also have influenced the present results, and further research is therefore needed to separate the influences of various factors.

The ADLQ results showed no severe problems with respect to the functional development of the children. The washing and bathing of oneself constituted the only exception but actually appeared to depend on the socio-economic circumstances of the families and the pervasive lack of water in the area.

In closing, it should be recalled that early detection without intervention is of little or no use. Further research should also be undertaken to compare the results for malnourished children participating in a nutrition programme with the results for malnourished children not participating in such a programme. Also, the specific effects of the nutrition programme on the various delays in the growth and development of children should be more carefully investigated.

Note

[1] For purposes of this research, ‘families’ are defined as the caregivers and children involved in the nutrition programme.

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