Training, Monitoring and Support Given to Key Role Players in the School Nutrition Programme: A Quantitative Approach

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Abstract: The study sought to examine training, monitoring and support provided to National School Nutrition Programme (NSNP) stakeholders in Pinetown district in South Africa. Underpinned by the positivist research paradigm, the study followed a quantitative research approach which utilised a descriptive cross-sectional research design. A random sample of 108 learners participated in the study. Descriptive statistics were used to analyse quantitative data which were presented in tables and text. The study found that some of the key stakeholders of NSNP were not adequately supported and trained and that monitoring was only done regularly by the teacher coordinators. The study proposed efficient training, monitoring and support of stakeholders of the school nutrition programme to improve the implementation process.

Key words: School Nutrition. Support. Stakeholders. Programme Delivery. Programme implementation.

I. BACKGROUND TO THE PROBLEM

The World Food Programme (WFP) (2016) notes that about 368 million school children in the world receive food at school every day. In some countries where poverty levels are extremely high, children only have access to a decent and nutritious meal through school feeding schemes yet such important programmes are negatively affected by poor funding (WFP, 2016). The provision of school meals is deemed important in ensuring that children attend school regularly and have access to food with required nutrients necessary for growth thereby promotion children’s health development. The provision of nutritious meals at school assists learners to raise concentration levels in their studies and improve their performance (Darko, 2014; Hayes & Berdan, 2013; WFP, 2016). It really becomes a serious challenge to note of instances where learners in poor countries will find it difficult to access meals at school when such school feeding programmes are important for children.

Hayes and Berdan (2013), Medeiros, Lima, de Almeida Maffi, de Lima Abadia, Martins, Dalamaria and Ramalho (2015) as well as Otsuki (2011) report that in countries such as United States of America (USA) and Brazil, school feeding programmes are implemented with specific dietary guidelines and there is reported successful implementation of the programmes as well as proper monitoring and diagnosis of problems in implementation. A country such as Brazil shares lessons in best practices in the implementation of school feeding programmes as a result of its successful implantation of such programmes in schools (African Union, 2015; Bundy, Woolnough, Burbano, & Drake, 2016). The African Union (2005) observes that in some sub-Saharan African countries, school feeding programmes were available in areas where there was political strife and food shortage. In such areas school feeding programmes often failed to ensure provision of adequate and nutritious food and school feeding schemes required to be improved in order to offer meaningful service to hungry children (African Union, 2015). In African countries such as Ghana school feeding programmes were implemented with no consideration for checks on food quality and safety of food provided to children. Lack of consideration on personal hygiene of food servers, poor or inadequate infrastructure compromised the effective implementation of school feeding programmes in Ghana (Darko, 2014; Okae-Adjei, Akuffo & Amartei, 2016; Sulemana, Ngah & Majid, 2013; WFP, 2016).

School feeding programme in South Africa

According to Kallman, 2005, the NSNP was introduced by the government of South Africa in 1994 to address the issue of inequality as well as poverty in poor communities. The NSNP was to address the constitutional rights of access to sufficient food; section 27 (1), (b) the right to basic nutrition section 28 (1), and (c) the right to basic education; section 29(1) (a) (Kallman, 2005; Lacey, 2012).

Since the majority of the people in South Africa live in poverty, providing meals at school may have a significant impact on the nutritional status and achievement of a learner (Lacey, 2012). Providing nutritional education at school may also have a significant impact on the nutritional status and achievement of a learner.
The NSNP was first introduced in primary schools, and later in high schools in quintiles 1, 2 and 3 in public schools (Department of Basic Education, 2009; Lacey, 2012). The quintile system groups schools according to the severity of poverty in a geographical area with the poorest community schools being in quintile 1 and the school in rich geographical areas being in quintile 5. Nutritional status of the learners was also used to target schools for the NSNP. According to Msila (2013), school garden projects were increasing in South Africa. This assertion needs more evidence since Msila’s conclusion emanated from the observations made only in some Eastern Cape Schools.

According to Kallman (2005) and Lacey (2012), each province in South Africa receives a conditional grand and they must comply with the implementation guidelines of the national department with regards to approved menus, nutrition quality and quantity as well as food safety. Furthermore, provinces must report quarterly to the National Treasury. Reports on monitoring were supposed to focus on nutrition quality, quantity and food safety.

Each school has a school nutrition committee. A school nutrition committee consists of the principal, teacher coordinator, school governing body member, food handler and food gardener (Rendall-Mkosi, Wenhold & Sibanda, 2013). The principal is responsible for the overall management of the programme. The teacher-coordinator receives and records the stock, and keeps up to date records of all invoices, all meals served and the number of learners fed on each day (Rendall-Mkosi, Wenhold & Sibanda, 2013). According to the Department of Basic Education (2009), the food handler is responsible for preparing, cooking, serving meals and maintaining hygiene around the cooking area. The stakeholders are expected to attend training workshops that will equip them with necessary skills for effective execution of their duties (Department of Basic Education, 2008). Horticulture manuals for schools, equipment and utensils guidelines, food specification guidelines, food preparation rules, Mnandi 4 sure recipe book and NSNP healthy lifestyles poster are supplied to schools to ensure effective implementation of the programme (Department of Basic Education, 2010; 2014).

The national school nutritional programme in South Africa seem to be plagued with many challenges including unavailability of the required infrastructure, delays in the delivery of food and non-delivery of food (Dei, 2014; Rendall-Mkosi, Wenhold & Sibanda, 2013). One study in Kwazulu Natal in South Africa indicated that food was sometimes not delivered on time (Kwatabana & Makhalamele, 2015). Lacey (2012) notes that in South Africa, there is the inadequacy of human resources to monitor the programme at district level. Furthermore, it was observed in the same study that monitoring and evaluation were somehow ineffective since programme implementers appeared not to have been trained on programme implementation and financial management (Kwatabana & Makhalamele, 2015; Rendall-Mkosi, Wenhold & Sibanda, 2013).

II. LITERATURE REVIEW

According to the Department of Basic Education (2009) workshops were to be held with stakeholders to clarify programme requirements, their roles as well as responsibilities.

According to Langsford (2012), training in the NSNP in Gauteng Province of South Africa involved district officials who were expected to pass knowledge and skills on to schools. Unsuccessful schools were to emulate from successful model schools. The Department of Basic Education in South Africa pays for cooking equipment, food and gas, as well as a stipend for food-handlers (Langsford, 2012). However, Kwatabana and Makhalamele (2015) note that food-handlers were not adequately supported in maintaining the gas stoves, cooking utensils as well as in the purchase of cleaning material. Langsford (2012) further indicates that large organisations were supplying mobile kitchens across the country in South Africa. The study by Quila and Tyilo (2014) gave evidence of a lack of training among the NSNP stakeholders who participated in their study in South Africa. Training, monitoring and support are critical in the programme implementation and ensuring that learners get the maximum benefit from the programme.

The Department of Basic Education (2009) observed that food handlers were trained on hygiene as well as food safety. However, despite the training, Dei (2014) noted that some learners disliked the food supplied in the school nutrition programme. In one of the schools in the South Coast of Kwazulu Natal it was reported that the principal and the school governing body inspected the delivered food for quality and quantity (Dei, 2014). In a related study on school nutrition programme in the Mpumalanga Province, Rendall-Mkosi, Wenhold and Sibanda (2013) note that standard monitoring tools were completed by the school nutrition coordinators on a monthly basis and sent to the provincial office. However, the same study noted irregular visits by district and provincial NSNP staff and there were no processes and procedures to monitor the quantity and quality of food served to the individual learners each day at each school. Eastern Cape Province had a standardised fund monitoring tool that schools submitted monthly (Rendall-Mkosi, Wenhold & Sibanda, 2013). Provincial programme coordinators and district monitors visited each school at least once per quarter, and schools that had more challenges were more frequently visited (Rendall-Mkosi, Wenhold & Sibanda, 2013). Food handlers were frequently changed hence the need for regular training to update new suppliers and food handlers with relevant information. This was not always possible due to inadequate funding. Moreover, the stakeholders were not
called for in-service training workshops (Quila & Tyilo, 2014). Generally, lack of training results in inefficiency in one’s performance of duty. As a result, the implementation of the NSNP in secondary schools was beset with many challenges.

In Ghana, Mali and Kenya, the school feeding programme is supported by several ministries. Maijers and Nalla (2014) assert that the Ministry of Education is responsible for policies related to the School Feeding Programme (SFP) in the three countries. The ministry of education formulates policies, provides funds, supervises and monitors the programme implementation. In Ghana and Kenya, the government decides on the menu for School feeding (Maijers & Nalla, 2014). The Ministry of Public Health is responsible for programme inspection to ensure good food storage and feeding conditions (Maijers & Nalla, 2014). This is done to ensure that the safety and nutritional requirements stipulated by the programme are met.

According to Maijers and Nalla (2014), the Ministry of Local Government and Rural development in Ghana is responsible for supervising and monitoring the implementation of SFP in districts and for organising the flow of funds from the government to the districts level. Maijers and Nalla (2014) observe that the Ministry of Food and Agriculture focuses on the policy for nutrition, on planning and coordination, and is responsible for capacity building of farmers including the provision of extension service and technological transfer of information. The Ministry of Food and Agriculture is also involved supervision of 30% of storage facilities, and for research into improved varieties of crops and breeds of animals. In Kenya, the Ministry of Agriculture (MoA) and the Ministry of Health (MoH) supervises all school stores, whereas, there is no supervision on the use of school storage facilities in Mali (Maijers & Nalla, 2014).

The School Feeding Programme in Ghana has special training programmes for managers of the school and caterers, where they are trained in food quality services and hygiene (Maijers & Nalla, 2014). There are full-time cooks. The key employees or caterers did not receive any formal training and they relied on instructions from caterers and on their own experiences.

Ghana has developed some tools for monitoring school feeding programmes in schools and these include the daily feeding monitoring tool for caterers, in which daily information is collected on type of meal prepared, number of pupils fed, ingredients (grouped under proteins, carbohydrates, fats) and the amounts used in meal preparation, procurement form for caterers to record food purchases, seller’s information as well as the source of food commodity. There is also a daily feeding monitoring tool for principals designed to capture daily information on meals prepared and portions of meals given to each child (Laar, 2016). The school term monitoring tool records pupil enrolment, dropouts, and the number of meetings by the school implementation team, while the sanitation and hygiene tool is used as an observation checklist to record the availability and maintenance of sanitation facilities, drinking water, and hand washing stations (Laar, 2016).

According to Fernandes et al. (2016) representatives from Ghana Health Services, School Health and Education Programmes and GSFP participated in training on the proper usage of the new School Meals Planner Tool. The training was intended to assist in the design school menus and to identify and select nutrient-rich foods to incorporate into menus (Fernandes et al., 2016). Training also involved advice on the use of cheap foods rich in complementary proteins as an alternative to animal proteins which are expensive and difficult to store when there is no refrigeration. The training also provided guidance on the use of appropriate types and quantities of vegetables. Training was done at community and school levels to support the implementation of the school Meals Planner Package in schools in Ghana and caterers and cooks were urged to participate in training sessions where they learnt to prepare meals according to new menus (Fernandes et al. (2016). They were also trained on how to use handy measures of food items and were provided with education on food safety, hygiene, cooking practices and nutrition. Caterers and cooks used iodised salt in meal preparation so as to prevent goitre. Headteachers and some members of the community were taught to monitor meal preparation and the usage of handy measures.

Fernandes et al. (2016) assert that training in behaviour change communication activities in Ghana School Feeding Programme was also provided by local non-governmental organisations. They provided information on water, food preparation and consumption, and improved hygiene and sanitation behaviours (Fernandes et al., 2016). Monitoring information was reported monthly by district officers to GSFP secretariat and monitoring visits were done in all districts at least once every school term (Fernandes et al., 2016). The monitoring and evaluation team asked caterers and teachers about different aspects of the intervention. The visits, according to Fernandes et al. (2016), served the purpose of providing additional training especially in schools which had assigned new caterers.

Quality assurance and accountability mechanisms like tracking, reporting and monitoring and evaluation systems are important in tracking the programme quality and effectiveness. This helps to improve the quality of the programme and to ensure that resources are being used effectively. Accountability, monitoring and evaluation systems are weak across many of the school feeding programmes except Brazil, with a system of checks and balances implemented by different stakeholder groups across State government institutions and civil society (Bundy et al., 2016).
OBJECTIVE OF THE STUDY

The main objective of this study was to assess how training, monitoring and support were provided to key stakeholders of the school nutrition programme in selected high schools in KwaZulu-Natal Province.

III. METHODOLOGY

Methodology refers to the process of finding answers to research questions. It includes the research design, population, sample size and selection, research instruments, validity and reliability of the instruments, data collection and analysis procedures. The research followed a post-positivist research paradigm. It made use of the quantitative research approach and a descriptive cross-sectional research design. The methodology that was used in this study is discussed below.

Permission and consent

Permission for the research was obtained from the Head of Department in KwaZulu-Natal Department of Education Head Office. The researcher then requested permission to conduct research from the respective district managers, circuit managers as well as school principals. Informed consent was obtained from all respondents.

Population and sampling

The quantitative population from one circuit consisted of 685 learners. For the quantitative sample, schools were stratified into quintile two and quintile three and learners were divided into males and females. The Quantitative sample size “n” was calculated using the formula:

\[ n = \frac{N}{1 + Ne^2} = \frac{685}{1 + 685(0.1)^2} = 87.26 \approx 87 \] (Ryan, 2013).

Where \( n \) = sample size, \( N \)=total number of learners in grade 12 in the eight schools, \( e \)= desired margin of error (10% at 90% confidence interval). The researcher decided to consider a large sample of 108 learners which was quite representative as it contained more than 10% of the learners in the quantitative population.

Learners were selected from schools by systematic random sampling using class registers. Table-1 below shows the Quantitative Population and Sample sizes.

<table>
<thead>
<tr>
<th>Identified School</th>
<th>Respondent Type</th>
<th>Total school enrolment</th>
<th>Number of students in the quantitative population</th>
<th>Number of Respondents in the quantitative sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>School A</td>
<td>Boys</td>
<td>958</td>
<td>77</td>
<td>10 (10)</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td></td>
<td>77</td>
<td>7 (10)</td>
</tr>
<tr>
<td>Schools B</td>
<td>Boys</td>
<td>430</td>
<td>15</td>
<td>4 (2)</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td></td>
<td>26</td>
<td>8 (3)</td>
</tr>
<tr>
<td>Schools C</td>
<td>Boys</td>
<td>1015</td>
<td>42</td>
<td>7 (5)</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td></td>
<td>48</td>
<td>12 (6)</td>
</tr>
<tr>
<td>Schools D</td>
<td>Boys</td>
<td>510</td>
<td>31</td>
<td>6 (4)</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td></td>
<td>32</td>
<td>7 (4)</td>
</tr>
<tr>
<td>Schools E</td>
<td>Boys</td>
<td>1135</td>
<td>47</td>
<td>8 (6)</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td></td>
<td>75</td>
<td>14 (10)</td>
</tr>
<tr>
<td>Schools F</td>
<td>Boys</td>
<td>645</td>
<td>48</td>
<td>7 (6)</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td></td>
<td>57</td>
<td>8 (7)</td>
</tr>
<tr>
<td>Schools G</td>
<td>Boys</td>
<td>342</td>
<td>18</td>
<td>3 (2)</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td></td>
<td>24</td>
<td>7 (3)</td>
</tr>
<tr>
<td>Schools H</td>
<td>Boys</td>
<td>535</td>
<td>38</td>
<td>-6</td>
</tr>
<tr>
<td></td>
<td>Girls</td>
<td></td>
<td>30</td>
<td>-5</td>
</tr>
<tr>
<td>Totals</td>
<td></td>
<td>5419</td>
<td>685</td>
<td>108 (87)</td>
</tr>
</tbody>
</table>

The numbers of respondents of the sample in brackets represent the calculated sample size while the other number represents the actual sample size that participated in the study.
IV. DATA COLLECTION AND ANALYSIS

According to Colton and Covert (2007), an instrument is a mechanism for measuring a phenomenon, which is used to gather and record information for assessment, decision making and understanding. This section will focus on questionnaires which were the only instruments that provided the quantitative data on training, monitoring and support.

Investigator administered a semi-structured questionnaire

The investigator administered a semi-structured questionnaire to collect data from learners. The semi-structured questionnaire was completed in the presence of the researcher. The questionnaires were completed by learners from the humanities, science and commerce classes. The researcher clarified each question to the learners before giving them time to write their responses. The respondents had the opportunity to seek further clarification on questions that they did not understand well. Learners were encouraged to write responses without influence from friends. The semi-structured questionnaire was suitable in this study to cater for the large samples of learners. Likert scale question items were quick to answer and the open-ended questions offered respondents an opportunity to give comments, explanations and views on the implementation of the school nutrition programme. Mitchel and Jolly (2010) highlight that, in an investigator-administered questionnaire, respondents can be surveyed at the same time and surveys can be conducted in a variety of locations. Moreover, investigator-administered questionnaires have a higher response rate and low costs (Ary, Jacobs & Sorensen, 2009; Mitchel & Jolly, 2010). Ary, Jacobs and Sorensen (2009) add that the researcher is restricted in terms of when and where the questionnaire can be administered.

Validity and Reliability

Validity refers to the extent to which the data measures what it is intended to measure (Newman & Ridenour 2008; Riazi, 2016). Validity was ensured by an expert and experienced researcher who reviewed the questions on the questionnaire and by pilot testing. This ensured that questions were comprehensive and clear for the particular group of respondents. The questionnaire had a sufficient set of relevant questions to adequately address the research objective.

External validity was achieved by random sampling of respondents across several strata (males and females in quintiles 2 and 3 in the commerce, science and humanities classes) that reflected the population to which the results were generalised (Ridenour & Newman, 2008). External validity was ensured by having a representative sample size which was more than 10% of the population size. Collection of qualitative data from department officials, principals, teacher coordinators, food handlers, service providers and learners in different schools increased the study's external validity.

Reliability refers to the consistency of measurements by instruments, and the accuracy of data or the precision of a measurement procedure (Brewer, 2000; Holloway & Galvin, 2010). The stability of a survey was obtained through pilot testing and Cronbach’s alpha on SPSS. Reliability was also achieved through the test-retest procedure where sections of the research instrument were tested by being subjected to the same subjects twice to check the consistency of data. According to Litwin and Fink (1995), test-retest reliability is measured by having the same set of respondents complete a survey at two different points in time to see how stable the responses are by comparing the two sets of responses. Correlation coefficients were also calculated to compare learners’ responses on related issues which, under normal circumstances, would yield almost similar responses if learners gave their response objectively. Litwin and Fink (1995) assert that correlation coefficients are considered good if they equal or exceed 0.70. The correlation coefficient is calculated using Spearman’s rank correlation for ordinal scaled data (ranked data) random variables.

DATA ANALYSIS

Quantitative data from questionnaires were analysed using SPSS and excel. The data were used to calculate frequencies and percentages of learners according to their responses on the questionnaire. The learners’ responses were then presented in tables. Percentages were also used to show various biographic characteristics of learners.

V. DATA PRESENTATION AND DISCUSSION

The research data was presented in texts and tables and was discussed. Conclusions and recommendations were made.

BIOGRAPHIC CHARACTERISTICS OF RESPONDENTS
This section presents the respondents’ gender, age categories, position of responsibility and years in the same school, to help in understanding their background to enhance the interpretation of the responses and comments made to the data collected.

Table 2: Distribution of Biographical characteristics of grade 12 learner respondents (N=108)

<table>
<thead>
<tr>
<th>Biography variable</th>
<th>Variable description</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>45</td>
<td>41.7</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>63</td>
<td>58.3</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>108</td>
<td>100</td>
</tr>
<tr>
<td>No of learners in Quintile</td>
<td>Quintile 2</td>
<td>29</td>
<td>26.9</td>
</tr>
<tr>
<td></td>
<td>Quintile 3</td>
<td>79</td>
<td>73.1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>108</td>
<td>100</td>
</tr>
<tr>
<td>Age (years)</td>
<td>15-20</td>
<td>96</td>
<td>88.9</td>
</tr>
<tr>
<td></td>
<td>21-25</td>
<td>8</td>
<td>7.4</td>
</tr>
<tr>
<td></td>
<td>No response</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>108</td>
<td>100</td>
</tr>
<tr>
<td>Position of responsibility</td>
<td>None</td>
<td>88</td>
<td>77.8</td>
</tr>
<tr>
<td></td>
<td>Class monitor</td>
<td>19</td>
<td>17.6</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td>4</td>
<td>3.7</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>108</td>
<td>100</td>
</tr>
<tr>
<td>Years in the same school</td>
<td>2</td>
<td>3</td>
<td>2.8</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>14</td>
<td>13.0</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>14</td>
<td>13.0</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>71</td>
<td>65.7</td>
</tr>
<tr>
<td></td>
<td>More than 5</td>
<td>5</td>
<td>4.6</td>
</tr>
<tr>
<td></td>
<td>No response</td>
<td>1</td>
<td>0.9</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>108</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 2 shows that 45 (41.7%) of the respondents were males and 63 (58.3%) of the respondents were females. The total sample size was 108. Out of the three schools in quintile two, 29 (26.9%) respondents were drawn from two of the three schools that were willing to take part in the study. Most of the respondents, 79 (73.1%), were from five schools in quintile three. The majority of the respondents, 96 (88.9%), were in the 15-20 age group, 8 (7.4%) in the 21-25 age group.

A substantial number of respondents, 88 (77.8%) did not have any position of responsibility, 19 (17.6%) of the learners were class monitors, 4 (3.7%) had other responsibilities other than that of class monitor. A significant proportion of respondents had been in the same school for at least three years. A small proportion of 5 (4.6%) had been in the same school for more than five years, while the largest proportion of 71 (65.7%) had been in the same school for four years. An equal number of respondents, 14 (13.0%) had been in the same school for four years and three years. The rest, 3 (2.8%), had been in the school for two years. The fact that most of the respondents were in the same school for at least three years resulted in more valid responses from the learners since they were more familiar with the programme. Their responses were based on observations made over a long period of time. The next section presents and analyses data in line with the research objective that guided the study in providing answers to the research question.

Results on training, monitoring and support are given to key role players

In attempting to answer the research question, a questionnaire was administered to 108 learners in seven high schools. The results of the respondents are presented in Table 3.

Table 3: Behaviour of stakeholders related to training, monitoring and support

<table>
<thead>
<tr>
<th>Observed character</th>
<th>Learners’ response (Number &amp; percentage of respondents)</th>
<th>STDEV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Always true 5</td>
<td>Sometimes true 4</td>
</tr>
<tr>
<td>Food handlers prepare the food on time every day.</td>
<td>48 (44.4)</td>
<td>50 (46.3)</td>
</tr>
</tbody>
</table>
Food handlers have a recipe book which they use to prepare meals. 31 (28.7) 5 (4.6) 46 (42.6) 2 (1.9) 24 (22.2) 0 (0.0) 18.6

The kitchen always has sufficient equipment to prepare meals. 24 (22.2) 27 (25.0) 55 (32.4) 6 (5.6) 13 (12.0) 3 (2.8) 12.6

Broken equipment is immediately replaced. 11 (10.2) 19 (17.6) 44 (40.7) 13 (12.0) 18 (17.6) 2 (1.9) 14.0

The gas tank is outside the kitchen & is secure. 80 (74.1) 1 (0.9) 6 (5.6) 0 (0.0) 19 (17.6) 2 (1.9) 31.2

Food handlers are always clean. 45 (41.7) 31 (28.7) 25 (23.1) 3 (2.8) 3 (2.8) 1 (0.9) 18.4

A poster on hand washing principles is displayed around the kitchen. 13 (12.0) 3 (2.8) 16 (14.8) 7 (6.5) 68 (63.0) 1 (0.9) 25.2

Meals provided on each day are of good quality always. 30 (27.8) 35 (32.4) 23 (21.3) 10 (9.3) 8 (7.4) 2 (1.9) 13.3

The environment around the kitchen is always clean. 15 (13.9) 34 (31.5) 22 (20.4) 14 (13.0) 21 (19.4) 2 (1.9) 10.6

Utensils are cleaned using soap every day. 37 (34.3) 13 (12.0) 49 (45.4) 3 (2.8) 4 (3.7) 1 (0.9) 20.1

The principal monitors the food prepared. 6 (5.6) 9 (8.3) 42 (38.9) 6 (5.6) 44 (40.7) 1 (0.9) 19.5

Departmental officials monitor the food prepared. 7 (6.5) 9 (8.3) 52 (48.1) 6 (5.6) 32 (29.6) 2 (1.9) 19.8

The principal &/or teacher co-ordinator checks the food delivered by the supplier. 56 (51.9) 23 (21.3) 18 (16.7) 2 (1.9) 7 (6.5) 2 (1.9) 20.5

The SGB member monitors the food served in the school nutrition programme. 7 (6.5) 13 (12.0) 44 (40.7) 3 (2.8) 40 (37.0) 1 (0.9) 19.1

Vegetables are grown in the school garden. 2 (1.9) 0 (0.0) 5 (4.6) 2 (1.9) 97 (89.8) 2 (1.9) 38.7

Fruit trees are grown in the school garden. 2 (1.9) 0 (0.0) 4 (3.7) 0 (0.0) 100 (92.6) 2 (1.9) 40.2

The school has a fruit tree and vegetable garden. 1 (0.9) 1 (0.9) 2 (1.9) 0 (0.0) 101 (93.5) 3 (2.8) 40.7

Vegetables are well maintained in the school garden. 0 (0.0) 0 (0.0) 2 (1.9) 3 (2.8) 100 (92.6) 3 (2.8) 40.2

Fruits are well maintained in the school garden. 2 (1.9) 1 (0.9) 2 (1.9) 2 (1.9) 99 (91.7) 1 (0.9) 39.8

Vegetables are sprayed when attacked by diseases and pests. 1 (0.9) 0 (0.0) 11 (10.2) 1 (0.9) 91 (84.3) 4 (3.7) 36.0

Fruits are sprayed when attacked by diseases and pests. 1 (0.9) 1 (0.9) 9 (8.3) 2 (1.9) 91 (84.3) 4 (3.7) 35.9

Vegetables in the school garden are of good quality. 0 (0.0) 2 (1.9) 6 (5.6) 0 (0.0) 98 (90.7) 2 (1.9) 39.3

Fruits in the school garden are of good quality. 0 (0.0) 2 (1.9) 6 (5.6) 0 (0.0) 99 (91.7) 1 (0.9) 39.7

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<tbody>
<tr>
<td>Food preparation support and gas security</td>
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<td>In response to the questions on support in food preparation and gas security, learners’ responses revealed that food handlers were generally getting enough support to enable them to prepare and serve meals to the learners. A large proportion of respondents 48 (44.4%) were of the opinion that food handlers always prepared food on time and almost an equal number 50 (46.3%) were of the view that food handlers sometimes prepared food on time. Only five respondents (4.6%) were neutral on the issue of food handlers’ preparation of food on time. Only one respondent (0.9%) indicated that food handlers rarely prepared food on time and an equal number was of the view that food handlers never prepared food on time, while three respondents (2.8%) never responded to that questionnaire item.</td>
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Table 3 presents quantitative data based on the study research question. The mean response frequency for all question items was 21.6. The next four sections present an analysis of the information on the table.

Food preparation support and gas security
In response to the questions on support in food preparation and gas security, learners’ responses revealed that food handlers were generally getting enough support to enable them to prepare and serve meals to the learners. A large proportion of respondents 48 (44.4%) were of the opinion that food handlers always prepared food on time and almost an equal number 50 (46.3%) were of the view that food handlers sometimes prepared food on time. Only five respondents (4.6%) were neutral on the issue of food handlers’ preparation of food on time. Only one respondent (0.9%) indicated that food handlers rarely prepared food on time and an equal number was of the view that food handlers never prepared food on time, while three respondents (2.8%) never responded to that questionnaire item.
On the issue of the recipe book, learners seem to have responded objectively. A large proportion of learner respondents 46 (42.6%) were not aware of the availability of a menu or recipe books since they were not involved in food preparation. Thirty-six learners (33.3%) were affirmative on the presence of a recipe book, while 24 (22.2%) indicated the absence of a recipe book and the rest 2 (1.9%) were of the view that the recipe books were never available. A recipe book is important in the preparation of the right quantities of food and also in guiding the preparation of a particular meal.

In the learners’ responses on the availability of sufficient equipment to prepare meals, 51 (47.2) agreed that there was sufficient equipment to use in meal preparation while 35 (32.4%) were not sure of the availability of such equipment. A smaller proportion 19 (17.6%) were on the negative side on the availability of sufficient support material on food preparation while a small proportion 3 (2.8%) did not respond to that question item. Learners’ responses indicated that many schools had enough equipment to assist them in meal preparation while some schools did not have sufficient equipment to support them in meal preparation.

Generally, learners were not aware of the urgency of the replacement of broken equipment. In their response on the urgency of replacement of broken equipment, 44 (40.7%) students were not aware of the urgency by which broken equipment was replaced, and 30 (27.8%) indicated that broken equipment was immediately replaced. Thirty-one (28.7%) of the learners who responded indicated that broken equipment was not immediately replaced. These responses could be representing varying situations in different schools. On a more positive note, 81 (75%) respondents indicated that gas tanks were outside the kitchen while 19 (17.6%) observed the gas tanks inside the kitchens. Gas tanks can be very dangerous when they are kept inside the kitchen as they may catch fire, burst and kill people.

Hygiene around the kitchen environment and food quality

The learners’ responses on issues of hygiene in the kitchen revealed that hygiene was generally good although some improvements were needed in almost all schools. Forty-five respondents (41.7%) agreed that food handlers were always clean while 31 (28.7%) indicated that they were sometimes clean. A large proportion of learners 25 (23.1%) were neutral on the issue of the cleanliness of the food handlers. A small proportion of 6 (5.6%) of learner respondents were not happy about the hygiene concerning food handlers. Only one respondent (0.9%) did not respond to this question. Fifteen (13.9%) of the respondents were positive on the facts that the environment around the kitchen was always clean, 34 (31.5%) indicated that the kitchen area was sometimes clean, while 22 (20.4%) were neutral on the cleanliness of the kitchen area. Thirty-five (32.4%) were not happy about the cleanliness of the kitchen environment. The varying responses among respondents were due to the variations in the levels of hygiene in different schools. The levels of hygiene in the kitchen were better in some schools than others. On the issue of cleaning kitchen utensils using soap, most respondents 49 (45.4%) were not aware of how cleaning was done by food handlers. As a result, they were neutral on the issue. A large proportion of learners 50 (46.3%) indicated that cleaning was done using soap. Seven (6.5%) respondents were of the view that cleaning of kitchen utensils was not done using soap. The results generally indicate that cleaning was done using soap but there could have been instances when soap was sometimes unavailable and cleaning was done with water only.

The study revealed that there were no posters on hand washing. Seventy-five (69.5%) of the learners revealed that there were no posters on hand washing, that were displayed. A small proportion of the learners 16 (14.8%) was aware of the posters, and an equal number was neutral on the availability of such posters.

There were positive reports on the provision of quality meals by 65 (60.2%) of the learners. A fairly large number of respondents 18 (16.7%) revealed that the quality of meals was not good while 23 (21.3%) were neutral on the issue of meal quality. The quality of some of the meals was fairly good while in some schools, improvements were needed to make the meals more appealing to the learners.

Monitoring of the NSNP

Learners’ responses eliciting the involvement of the principals, the departmental officials and the SGB chairpersons on monitoring were largely neutral with 42 (38.9%), 52 (48.1%) and 44 (40.7%) respectively on the neutral position. This is an indication that most learners were not aware of the involvement of such stakeholders in monitoring the school nutrition programme. Fifty learners (46.3%) disagreed that principals were involved in monitoring the programme while 15 (13.9%) agreed that principals were involved in monitoring the nutrition programme. Thirty-eight (35.2%) disagreed that departmental officials were involved in monitoring the programme while a smaller number 16 (14.8%) was of the view that departmental officials were involved in monitoring the NSNP. A large number of respondents 43 (39.8%) disagreed that the SGB chairpersons were involved in monitoring the programme while 20 (18.5%) indicated that the SGB chairpersons were involved in monitoring the NSNP. A substantial number of learners 79 (73.1%) agreed that the principals or the teacher co-ordinators checked the food delivered by the suppliers while 18 (16.7%) were neutral on that item as they were probably unaware of the issue of the stakeholders involved in checking the delivered food. A
very small number of respondents two (1.9%) indicated that the food delivered to the school was rarely checked while 7 (6.5%) were of the view that the delivered food was never checked at all. Generally, the teacher coordinators and the principals monitored the food more often than the SGB chairperson and the department officials because they are mostly in the school premises.

Vegetable gardens in schools

The questions on vegetables and fruits in the school gardens indicated a high level of consistency in learners' responses. A significantly large proportion of the respondents 101 (93.5%) indicated that most schools in Molweni circuit did not have fruit and vegetable gardens. A very high percentage of respondents reflected that there were no vegetables (91.7%) and fruits (92.6%) grown within the school premises. All the subsequent questions on fruit and vegetable gardens yielded responses that were consistent with the first responses since they were follow up questions on fruit and vegetable gardens.

Reasons for learners’ dislike of certain meals

Learners were given food in all schools from Monday to Friday. However, some of the learners indicated various reasons for not taking certain meals. Some of the reasons are presented in Table 4.

Table 4: Reasons for learners’ dislike of some meals

<table>
<thead>
<tr>
<th>Food disliked &amp; reason</th>
<th>Number &amp; (%) of respondents</th>
<th>Food disliked &amp; reasons</th>
<th>Number &amp; (%) of respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>soya mince</td>
<td></td>
<td>samp and beans</td>
<td></td>
</tr>
<tr>
<td>not well prepared</td>
<td>10 (9.3)</td>
<td>not well prepared</td>
<td>6 (5.6)</td>
</tr>
<tr>
<td>stomach problems after eating</td>
<td>4 (3.7)</td>
<td>stomach problems after eating</td>
<td>8 (7.4)</td>
</tr>
<tr>
<td>bad taste</td>
<td>6 (5.6)</td>
<td>bad taste</td>
<td>5 (4.6)</td>
</tr>
<tr>
<td>Allergic</td>
<td>2 (1.9)</td>
<td>Allergic</td>
<td>6 (5.6)</td>
</tr>
<tr>
<td>Fish</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>not well prepared</td>
<td>18 (16.7)</td>
<td>Cultural</td>
<td>2 (1.9)</td>
</tr>
<tr>
<td>stomach problems after eating</td>
<td>8 (7.4)</td>
<td>Do not like fish</td>
<td>3 (2.8)</td>
</tr>
<tr>
<td>bad taste</td>
<td>1 (0.9)</td>
<td>bad smell</td>
<td>1 (0.9)</td>
</tr>
<tr>
<td>Allergic</td>
<td>6 (5.6)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4 summarises the reasons why learners did not like certain meals. A number of learners complained that some of the meals were not well prepared. Ten (9.3%) of the learners expressed that soya mince was not well prepared, while 6 (5.6%) had the same sentiments for the Wednesday meal which consisted of samp and beans. A relatively higher number of learners 18 (16.7%) shared the view that fish for Monday was not well prepared. Moreover, 6 (5.6%) and 5 (4.6%) students complained about the bad taste of soya mince and the Wednesday meal of samp and beans, respectively. An equal number of learners 8 (7.4%) had stomach problems after eating fish on Monday, and samp and beans on Wednesday; while 4 (3.7%) had the same problem after eating soya mince. A similar number of learners 6 (5.6%) reported being allergic to samp and beans on Wednesday and fish on Monday. A very small number of learners 2 (1.9%) reported that they did not like fish due to cultural reasons.

Main findings on training, monitoring and support of key role players in the schools’ nutrition programme

Data obtained through the use of the questionnaire revealed the absence of adequate training and hence, knowledge of food preparation among food handlers. Confirmation was made through the learners who exposed that the food had a bad taste, was sometimes not well cooked; and others who indicated that they had stomach problems after eating the meals. A relatively high number of respondents identified teacher coordinators as monitors of the programme. School principals and departmental officials were rarely involved in monitoring the nutrition programme. Limited support with cleaning materials to some food handlers was partly evidenced by a higher number of respondents who disagreed that the kitchen area was always clean. An exceptionally high proportion of respondents confirmed the lack of the vegetable gardens in all high schools except one.

VI. DISCUSSION OF RESEARCH FINDINGS

It is likely that stakeholders’ training, monitoring and support has a bearing on their knowledge and understanding of their roles and ultimately how the NSNP is implemented. The quantitative study had
limitations that it could not reveal all the training, monitoring and support provided to key role players. Learners were not aware of some of the issues, hence, there was a need for complementing the quantitative data with qualitative data to get a holistic picture of the issues under consideration. The qualitative data using in-depth interviews would likely reveal more information on stakeholders’ understanding of the purpose of the school nutrition programme.

**Training of stakeholders**

Some learners indicated some of the food was not well cooked and the taste was not good. This was an indication of some level of incompetence among some of the food handlers on some of the meals. This was possibly due to lack of training. Langsford’s (2012) study in Gauteng Province in South Africa also exposed that food handlers lacked training in cooking and basic hygiene. Hence, some of the food handlers were not aware of how to perform their duties effectively. The quantitative data indicated that there were problems associated with cooking as well as hygiene. Enriching the quantitative data with qualitative data from in-depth interviews from food handlers would have revealed if the food handlers were aware of the quantities of food items to cook for a particular number of learners according to the menu quantity schedules provided to schools by the district office. This would have revealed if food handlers were able to use the menu which specified the quantities for each food item to be prepared per learner per day to determine the quantities required by the school per day. The research data revealed the taste of the food in some instances was bad and the food was sometimes not well cooked. It was likely that food handlers were not exposed to Mnandi 4 sure recipe book which indicated the quantities of food items to be prepared for a certain number of learners as well as how to prepare the food like soya mince, which they were not familiar with (Department of Basic Education, 2016).

Food that has a bad taste and sometimes not well cooked is likely to be due to lack of training. This was contrary to the assertion that was made by the Department of Basic Education (2009), that workshops were conducted with stakeholders of the National School Nutrition Programme. There was a general lack of knowledge among stakeholders especially food handlers in related to performing their roles. The research findings concurred with the findings in the studies by Quila and Tyilo (2014) who also highlighted that stakeholders of the National School Nutrition Programme in South Africa were not trained and had problems associated with execution of their duties.

A large proportion of respondents complained about low standards of hygiene around the kitchen and there were no posters to support the hygiene of food handlers. This could partly be attributed to a lack of training. According to the Department of Basic of Education (2009), food handlers were to be trained in food preparation, hygiene and food safety. The lack of training was possibly the cause for poor quality of meals reported by the respondent learners in the self-administered questionnaire. Some of the respondent learners pointed out that the food was not well cooked. Although the food handlers cooked in their homes, they needed training on how to best cook in large pots as well as how to mix different ingredients to make the meals appealing and tasty. Contrary to the findings of this study, findings in the study by Kwatubana and Makhalamele (2015) in South Africa singled out food handlers whom they indicated that they were well trained and were performing their duties effectively. The dissatisfaction with the food among learners affirmed Dei’s (2014) observation about learners’ disliking the NSNP food that was served at one of the Primary schools in KwaZulu Natal.

**Monitoring of the programme**

The quantitative data revealed that the teacher co-ordinators was the main monitor of the NSNP. Principals and SGB chairpersons were rarely involved in monitoring the programme. Contrary to the findings of this study, Dei’s (2014) case study in Ugu District revealed that principals and SGB chairperson inspected the quantity and quality of food delivered by the service provider. The department officials also rarely monitored the NSNP. This was probably due to unavailability of departmental vehicles for district officials to travel to the schools to monitor the NSNP. This lack of transport was affirmed in Rendall-Mkosi, Wenhold and Sibanda’s (2013) study in South Africa.

Generally, there was inefficiency in monitoring the programme in KwaZulu-Natal. Contrary, the study by Rendall-Mkosi, Wenhold and Sibanda (2013) in Eastern Cape Province in South Africa revealed that district monitors visited schools more often than the number of visits reported by respondents in this study. In addition, provincial programme coordinators were reported to be involved in monitoring the NSNP in schools in Eastern Cape Province. Monitoring by provincial programme co-ordinators was not evident in this study.

Frequent monitoring, similar to what is done in Nigeria by principals and teacher co-ordinators who monitored food quality and portion sizes daily, as well as the local government area council that verified the information by collecting feeding allowance reports twice per month, is important if quality and quantity are to be maintained (Bundy et al., 2016). The daily feeding monitoring tool, according to Laar (2016), is also used in Ghana to capture information on meals prepared and portions of meals given to each child. Monitoring visits by
the district and provincial officials, according to Fernades et al. (2016), are important in identifying specific training needs of stakeholders. Monitoring may also help to identify successful schools, which can, according to Langsfords’s (2012) study in Gauteng Province in South Africa, be used as model schools from which unsuccessful schools can emulate.

Support for the programme

The research findings reflected that there were no proper kitchens built specifically for the NSNP. This meant that learners had to feed in their classrooms or outside. Studies by Bundy et al. (2016), Hochfeld et al. (2015) and Rendall-Mkosi, Wenhold and Sibanda (2013), confirmed the absence of proper kitchens in most schools in South Africa. This observation is contrary to the assertion made by Langsfords (2012) that large organisations were supplying mobile kitchens across the country. The kitchens were probably supplied to a limited number of schools in Gauteng Province only. Studies by Sulemana, Ngah and Majid (2013) and Okae – Adjei, Akufio and Amartei (2016) also revealed the absence of infrastructure in schools in Ghana where cooking was done under trees. The absence of infrastructure may lead to contamination of food and hence various forms of infections.

The Department of Basic Education (2009) asserts that food handlers were trained in hygiene. However, they could not easily maintain hygiene if they were not adequately supported. The food handlers observed in the study population did not have uniforms and muslin caps, unlike food handlers observed in Rendall-Mkosi, Wenhold and Sibanda’s (2013) studies in Eastern Cape and Mpumalanga where all food handlers had uniforms. The department must ensure that all food handlers have uniforms to maintain high levels of hygiene.

The study’s observation that safety standards were not adhered to as the gas tanks and gas stoves in some schools were in the same room and lacked maintenance. This affirmed observations made by Randall-Mkosi, Wenhold and Sibanda (2013) and Langsfors (2012) in similar studies in South Africa. This was against the gas safety guidelines which restrict the storage of gas cylinders to only outside the kitchen in a locked steel cage (Department of Basic Education, 2016). This eliminates the hazards of possible gas leaks, fires, explosions and carbon monoxide poisoning (Department of Basic Education, 2016).

The data from the questionnaires reflect that there were no fruit and vegetable gardens in participating schools. This was denying learners the chance to learn self-reliant skills on gardening. On the issue of unavailability or vegetable gardens, the research findings were different from the observations by Langsfors (2012) in Gauteng, Msila (2013) in Eastern Cape and Rendall-Mkosi, Wenhold and Sibanda (2013) in Eastern Cape and Mpumalanga Provinces of South Africa, where schools had vegetable gardens. According to Msila (2013), school garden projects were increasing. This observation could have been true for only a few schools in Eastern Cape and other provinces. In all of the schools except one, there was adequate space and water was always available. Only the horticultural manuals, seeds, garden tools gardening expertise and suitable gardeners were not available to initiate the gardening projects. Such projects can equip learners with the relevant skills that can help them to be self-sufficient later in their lifetime.

VII. CONCLUSIONS AND RECOMMENDATIONS

Lack of training among food handle reduced the quality of some meals in schools. Monitoring was mainly done by teacher-coordinators in most schools. Lack of some useful materials such as cleaning materials and sinks in kitchens and far away taps significantly compromised the level of hygiene in the kitchen and among learners.

- In order to ensure high standards in the implementation of the NSNP by stakeholders within their heterogeneous school systems, there is need to familiarise and capacitate stakeholders on their roles of the school nutrition programme. Stakeholders’ training programmes should integrate their roles as well as objectives of the NSNP to enhance effective programme implementation and maximum benefit to the learner and the community.

- The SGB members may identify community members who are talented in food preparation, improve their skills and use them in training food handlers food preparation techniques within their schools in the cluster. Involving community members who have expertise in food preparation, and nutrition education may improve the efficiency of the programme at a low cost. Involving nutritionists may also be involved and developing a positive rapport and trust among stakeholders is crucial in ensuring efficiency in the programme.

- The district officials should ensure that all stakeholders have access to guidelines and related policy circulars to ensure shared vision and increased understanding of the implementation of the NSNP. Stakeholders should be fully aware of the provisions of these guidelines and circulars and what is expected of them in regard to learner rights, interests, and needs. Understanding the policies and guidelines enable stakeholders to implement them correctly.
It is pivotal for stakeholders to be offered relevant support by key players like district officials, SGB members, school administrators, colleagues, parents, and learners. There is a need for a concerted effort and support from these stakeholders. Regular monitoring and evaluation of the programme must be done to identify problems in the programme and solve them timeously. Providing Food handlers sufficient support in cleaning the kitchen, cleaning the environment around, as well as cleaning the cooking utensils will greatly improve the hygiene.

If all schools could install taps and sinks inside and outside the kitchen, hygiene around the kitchen and among the learners as they collect food will greatly improve.

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