



THE REVOLUTIONARY GOVERNMENT OF ZANZIBAR

ZANZIBAR SCHOOL HEALTH and NUTRITION

Survey 2022

Key Findings



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LIST OF ABBREVIATIONS

AFHS	Adolescent-friendly health service
BMI	Body mass index
CAPI	Computer-assisted personal interviews
Hb	Haemoglobin
IPAQ	International Physical Activity Questionnaire
LMICs	Low- and middle-income countries
MoEVT	Ministry of Education and Vocational Training
MoH	Ministry of Health
OCGS	Office of the Chief Government Statistician
PDQS	Prime diet quality score
RDT	Rapid diagnostic test
RLT	Regional laboratory technologist
SAC	School-age children
SDG's	Sustainable Development Goals
SNP	School Nutrition Programme
SSA	Sub-Saharan Africa
SHNS	School Health and Nutrition Survey
TFNC	Tanzania Food and Nutrition Centre
UNICEF	United Nations Children's Fund
UHC	Universal health coverage
WASH	Water sanitation and hygiene
WHO	World Health Organization

FOREWORD

This report presents the findings of the 2022 Zanzibar School Health and Nutrition Survey (ZSHNS). The survey was implemented through a multi-sectoral collaboration involving the Office of the Chief Government Statistician (OCGS), the Ministry of Health (MoH) and the Ministry of Education and Vocational Training (MoEVT) under the technical assistance of the Tanzania Food and Nutrition Centre (TFNC) with funding support from Global Affairs Canada through United Nations Children's Fund (UNICEF), Tanzania.

The 2022 ZSHNS is the first comprehensive representative survey of primary and secondary schools in Zanzibar, designed to provide information on the demographic characteristics, socio-economic, physical activities, water, sanitation and hygiene (WASH) as well as female menstrual attributes. It also covers dietary characteristics (food preference and eating habits) and health/nutrition supplements in Zanzibar. Results from this assessment will help to validate and complement administrative data that has been regularly collected from the schools by the MoEVT. The primary objective of the SHNS is to provide up-to-date information on the nutritional and health status of school-age children (SAC) and adolescents in Zanzibar's primary and secondary schools. To that effect, the assessment provides baseline data for reporting, monitoring and tracking the progress of various indicators stipulated in Zanzibar Development Vision 2050 and the Sustainable Development Goals (SDGs).

I, therefore, take this opportunity to encourage policymakers, planners, and other stakeholders in the nutrition and health sectors to use these findings in the planning, implementation, monitoring and evaluation of programs to improve the nutritional and health status of SAC and adolescents in the country. This information can guide various processes in education programs in Zanzibar to ensure that children enjoy a conducive learning environment that could make them healthier, more attentive learners, which, in turn, could boost school attendance and the cognitive learning abilities of the pupils/students.

I would like to call upon all policymakers, planners and other stakeholders in the education and health sectors to adopt and devise sustainable planning to enhance and achieve goals that would reduce the triple burden of malnutrition and enhance levels of physical activity among SAC (5–9 years), early adolescents (10–14 years) and late adolescents (15–19 years) in both primary and secondary schools. Furthermore, plans and interventions need to be implemented not only to improve dietary intake but also to enhance quality and practices to reduce the burden of anaemia among SAC and young adolescents. It is of great important to evaluate the school health and nutrition environment, including the infrastructure, education on nutrition in school curricula as well as health and nutrition interventions to make sure these initiatives are scaled up throughout the country.

The scaling up of such initiatives could further ensure that children in schools are able to learn in a dignified and healthy environment through the availability of requisite food and health services.

Hon. Nasser Ahmed Mazrui
Minister of Health, Zanzibar

ACKNOWLEDGEMENTS

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OCGS would like to extend special thanks for the technical support from UNICEF with the generous financial support from Global Affairs Canada (GAC). It would also like to thank all individual consultants, oversight organizations, and partners for their role in organizing and preparing questionnaires, training field staff, coordinating fieldwork, and supporting the development of this report.

The OCGS would also like to thank all the field supervisors, who oversaw the data collection exercise, and field data collectors who interviewed students. Moreover, the OCGS would like to extend its appreciation to data entry clerks and regional and district teams (e.g., laboratory technologists/technicians, school health programme co-ordinator, nutrition officers and drivers) for their support in conducting the survey. Furthermore, the OCGS would like to thank all the students and schoolteachers for their readiness to participate in the survey.



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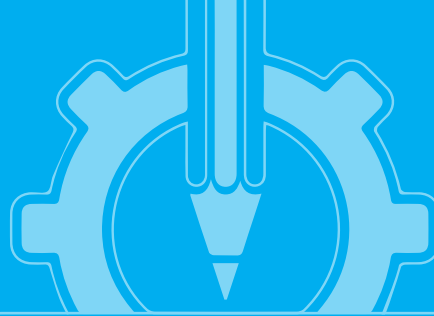
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Chapter 1

INTRODUCTION



The Ministry of Health (MoH) Zanzibar conducted the 2022 Zanzibar School Health and Nutrition Survey (ZSHNS). This is the known first survey whose aim was primarily to gather representative data on the nutritional status and associated factors for the target age group, which has often been overlooked in previous studies [1, 2]. The aim of the survey is to guide interventions to improve the health and nutritional status of children and adolescents in Zanzibar. This joint effort survey involved the MoH, the Office of the Chief Government Statistician (OCGS), Zanzibar, and UNICEF Tanzania. The Tanzania Food and Nutrition Centre (TFNC) provided technical support based on its experience from the latest Tanzania National Nutrition Survey of 2018 and the National Malaria and Nutrition Survey 2019 [2].

The 2022 Zanzibar School Health and Nutrition Survey (ZSHNS) aims to guide interventions to improve the health and nutritional status of children and adolescents in Zanzibar.



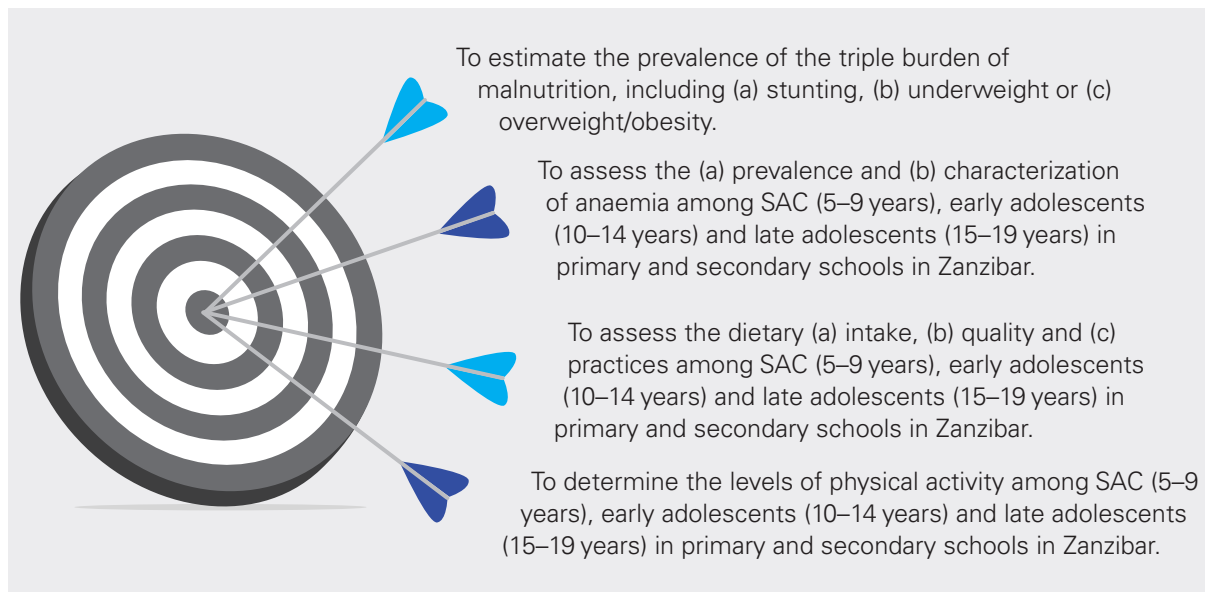
The key findings present a summary of both the methods and key results of the 2022 ZSHNS.

1.1 Survey objectives

1.1.1 General objective

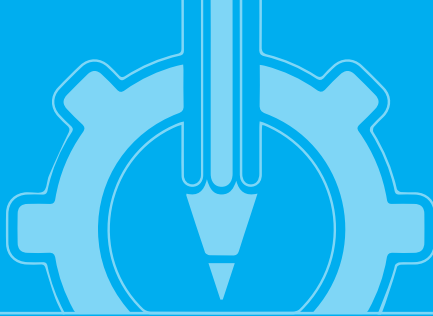
The main objective of the ZSHNS was to collect nationally representative data on the health and nutritional status of school-age children (SAC) (5–9 years), early adolescents (10–14 years) and late adolescents (15–19 years) to gain new insight into and enhance our understanding of adolescent health and well-being in the social context of Zanzibar.

1.1.2 Specific objectives



The specific secondary objectives of the ZSHNS were to:

1. Assess the school health and nutrition environment including (a) infrastructure – playground, school garden, school kitchen, canteen, WASH facilities – and (b) existing health and nutrition interventions such as school meal.
2. Determine the prevalence of diseases burden among SAC (5–9 years), early adolescents (10–14 years) and late adolescents (15–19 years) in primary and secondary schools in Zanzibar.
3. Assess the status of menstrual hygiene management among school-age early adolescents (10–14 years) and late adolescents (15–19 years) girls in primary and secondary schools in Zanzibar.
4. Determine the prevalence of disability and child labour among SAC (5–9 years), early adolescents (10–14 years) and late adolescents (15–19 years) in primary and secondary schools in Zanzibar.



Chapter 2

SURVEY IMPLEMENTATION



2.1 Study area

This survey was implemented in all the five regions of Zanzibar archipelago covering 11 districts (survey domains).

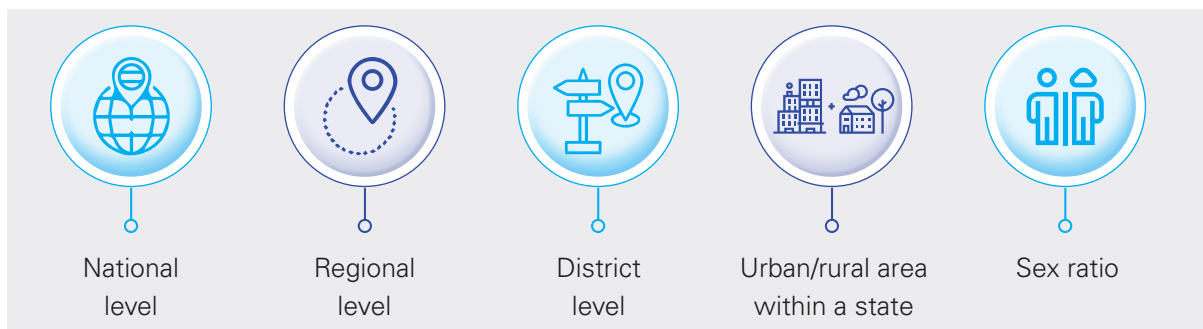
2.2 Study design

This cross-sectional survey collected information on SAC and adolescents aged 5–19 years from 93 primary and secondary school located in the Zanzibar Isles. The study employed multi-stage sampling to select a representative sample of SAC and adolescents aged 5–19 years old attending either primary or secondary schools in Zanzibar. The survey estimates at the national, regional and district levels informed the estimates and weighting of the cluster sampling strategy for the target population.

2.3 Sample size determination and sampling

2.3.1 Sample size determination

The ZSHNS sample was designed to estimate the prevalence of anthropometric and biochemical indicators among pupils across the following domains:



The sample size was estimated at the district level (domains) to provide a plausible estimate of the indicators for each district and aggregated to obtain the regional and national sample. Prevalence of anaemia was the preferred indicator, whereby an indicative value of 50 per cent was used. A margin of error of 0.5, significance level of 5 per cent and design effect of 1.5 informed the estimation of the district's sample size. The design effect helped to account for the clustering effect at the district level. The estimate settled at a total of 2,556 primary and secondary SAC and adolescents from 93 schools found in the 11 districts based on the stated criteria (see Annex 1). Among the selected pupils, 1,768 (69.1 per cent) were from primary schools and 788 (30.8 per cent) were from secondary schools.


2.3.2 Sampling

The ZSHNS stratified the study samples to ensure representation by geographical location and school type. The 2022 ZSHNS was implemented in two stages, utilizing a stratified multi-stage sample design. The first stage was the selection of a sample of schools as the primary sampling unit (PSU) using probability proportional to size (PPS). The second stage involved the selection of only one class level (say, standard I, II, form I, II and so on) using simple random sampling (SRS). For each selected class and from all consenting SAC and adolescents, only 28 SAC and adolescents were selected. To achieve a systematic selection of individuals, random start numbers ranging from one to nine were prepared for each school for boys and girls, respectively, before the visits. These boys and girls were selected

independently. Efforts were made to get an equal number of boys and girls (14 each) by selecting them separately. The OCGS issued sampling guidance notes as part of the standardized sampling report providing comprehensive information on the strategy employed. This information is part of the metadata attached to each region's data file.

2.4 Sampling frame

In all probability sample surveys, each sampling unit in the target population has a known, non-zero probability of being drafted into the sample. To attain this requirement, the 2021 list of all schools disaggregated up to the district level served as the sampling frame. The MoE maintains it as a complete list of all registered schools together with their respective number of SAC and adolescents. Schools with less than 100 SAC and adolescents were excluded from the sampling frame. Table 1 depicts the number of sampled schools and the number of schools selected across districts.

 **Table 1** Number of schools in the frame and number of selected schools by district

District Name	Number of Schools in Frame			Number of Selected Schools		
	Rural	Urban	Total	Rural	Urban	Total
Unguja						
Kaskazini A	41	9	50	4	3	7
Kaskazini B	24	4	28	5	2	7
Kati	41	11	52	5	2	7
Kusini	15	10	25	5	2	7
Mjini	0	49	49	0	10	10
Magharibi A	2	47	49	2	9	11
Magharibi B	3	68	71	2	10	12
Pemba						
Wete	43	13	56	5	4	9
Micheweni	27	6	33	5	2	7
Chake Chake	30	20	50	5	3	8
Mkoani	43	10	53	5	3	8
Total	269	247	516	43	50	93

Each district in the sampling frame was treated as an independent domain. To take advantage of possible gains in precision and reliability of the survey estimates from stratification, the schools were first stratified according to the 11 administrative districts and then into urban and rural locations. However, urban and rural domains only function at the national level.

2.5 Study population, unit of analysis and eligibility

The target population was school children from both primary and secondary schools in Zanzibar. The unit of analysis was SAC and adolescents aged 5–19 years.

2.6 Survey implementation

The Socials Statistics Department of the OCGS in collaboration with the Nutrition Unit of the MoH, with the technical support of the TFNC, was responsible for planning, administration of survey resources, survey design, questionnaire design, fieldwork, analysis and report writing.

2.7 Data collection tools and materials

The survey data were collected using a tablet-based questionnaire programmed with Survey Solutions, with paper forms serving as backup. Quantitative data were collected using both individual and school questionnaires (Annex 2: Survey Questionnaire). Structured questionnaires served as an interview guide during the collection of data from all the SAC and school teachers selected. Three different questionnaires were designed to capture survey data:



Survey instruments were translated from English to Kiswahili for accessibility purposes, translated back to English (by someone not involved in the initial translation to Kiswahili) and revised accordingly for clarity to ensure that the instruments were accurately and clearly translated. Questionnaires were developed to reflect health and nutrition issues among children and adolescents aged 5–19 years.

The general questionnaire helped to collect information from all the eligible SAC and adolescents aged 5–19 years. They were asked questions on the following topics: demographic characteristics, socio-economic, physical activities, WASH and female menstrual attributes. Dietary diversity alongside dietary quality scores questions were adapted from a validated and modified individual dietary diversity questionnaire as recommended by the Food and Agriculture Organization (FAO) of the United Nations individual and household dietary diversity guidelines and other related literature and the prime diet quality score (PDQS), which is a 21-unit food-based score developed using a modified Prime Screen questionnaire. The questionnaires administered were uploaded on a daily basis onto the local servers for management and aggregation.

2.8 Translation and pretesting of survey questionnaires

These data collection tools were initially prepared in English, later translated into Kiswahili and then programmed for the electronic tablet.

2.9 Recruitment, training and standardization of field data collectors

2.9.1 National facilitators and supervisors

National facilitators and supervisors came from participating institutions, namely the OCGS Zanzibar, the MoH, and the MoE Zanzibar. National supervisors were selected based on their professional backgrounds and expertise. They were responsible for overseeing the day-to-day activities and coordinate the teams.

2.9.2 Data collectors

There were five data collection teams. Each team had an enumerator, a nutritionist, a school teacher (mainly school health programme coordinator), and laboratory technician.

2.9.3 Training and standardization of field data collectors

Before the survey kicked off, several training sessions were conducted: The master training, which basically involved familiarizing the survey core team with the survey tools and methodological aspects, followed by the training of trainers and the main training. The second stage of training involved staff from the OCGS, MoH and TFNC, who then participated in the pilot test. The main training was conducted at the OCGS's head office comprising 5 supervisors, 15 enumerators, 10 blood sample collectors, 5 blood sample processors, 3 quality assurance team members and 1 lab co-ordinator. An intensive training programme on survey methodology, questionnaire, concepts and definitions and the use of data capturing application was carried out. Few more enumerators were trained as reservists should any enumerator fail to continue with the exercise.

2.9.4 Pre-testing

Testing the methodology of data collection and assessing the flow of questions in the questionnaire are two important aspects of a pre-test, which must be carried out before the actual fieldwork. A major concern during the development of the questionnaire was that it should present a clear understanding of the questions, ease the burden on the respondents in terms of clarity, particularly for children aged below 10 years, and minimize field problems. To achieve this goal, the questionnaire was pre-tested with the survey core teams just weeks before the main training. The pre-test yielded invaluable information on the extent of respondent burden, flow of the questions, interviewer workload and was particularly valuable in providing in-depth responses for all the questions in the questionnaire and the instructions or interviewing procedures that might affect the quality of the data. In addition, the pre-test served as a practical training and guide for the members of the project implementation team, especially on the use of the computer-assisted personal interviews (CAPI) system.

2.9.5 Pilot testing


The pilot mainly tests whether the survey tool of CAPI applications and the questionnaire are sufficiently adequate to provide the required data within a specified time. The pilot test helped to review and improve the flow of survey questions flow and iron out the ambiguous questions. The data collected from the pilot survey was used to snapshot statistical tables. The pilot test was conducted in two schools, one primary and one secondary, and involved an equal number of SAC and adolescents. A general review session was held after the pilot test to discuss the findings from the field and address any challenges or deficiencies in the questionnaires. The process helped to finalize the survey instruments.

2.10 Data collection

The questionnaires were developed to reflect health and nutrition issues among children and adolescents aged 5–19 years. Two questionnaires were used to collect information on the biomarker. Moreover, SAC and adolescents were asked questions on the following topics: demographic characteristics, physical activity, socioeconomic, WASH and female menstrual attributes. Also, dietary characteristics (food preference, eating habits, food frequency and food security), socio-emotional development and health/supplementation were explored. PDQS, was developed using a modified Prime Screening questionnaire.

2.10.1 Individual questionnaire

Individual questionnaires were completed for all the eligible children and adolescents aged 5–19 years, who were enrolled in the sampled schools. Some questions were specific to different age groups: children aged 5–9 years, adolescents aged 10–14 years and adolescents aged 15–19 years. The individual questionnaires included the following modules.

 **Table 2** Modules for individual questionnaire

S/No	Questionnaire Modules	Information Collected
1	Demographic information	Date of birth, sex, birth order, parents' education, employment status and wealth
2	Household resources information	Details, information on wealth index
3	Physical activity	Light, vigorous, walking and seating physical activities
4	WASH practices	Sources of drinking water and water treatment methods, household sanitation, and wash facilities
5	Female menstruation 10–19 years	Awareness, experience, materials used during periods, missing school due to periods and related reasons
6	Eating habits	Food consumption (breakfast, eating fast food from restaurant) and hunger due to shortage of food
7	Dietary quality	Consumption of 21 food groups categorized as healthy or unhealthy food groups
8	Overall health	Health information (indicators and symptoms of communicable diseases like diarrhoea)
9	Disability	Washington Group Disability questionnaire that assessed those who have 'long-term physical, mental, intellectual or sensory impairments which may hinder their full and effective participation'

2.10.2 Anaemia testing

Blood samples were collected from selected SAC and adolescents to determine the presence of malaria parasites and haemoglobin (Hb) level. Sterile needles were used to make a prick on the finger of each pupil to collect blood samples. Hb concentration was measured using a drop of blood obtained via the finger prick and then stored in micro cuvettes, which were inserted into the hemoglobinometer to determine the Hb concentration.

2.10.3 Anthropometric measurements

Height and weight were measured/taken for all the participants (SAC and adolescents aged 5–19 years) during the survey.

The study used following the instruments:

Height measuring board: Height (cm) was measured without shoes using a height measuring board (Shorr productions, Maryland, USA) with a precision of 0.1 cm.

SECA electronic scale: Weight of the pupil was measured using Seca electronic scale (Seca gmbh and Co.kg 22061, Hamburg, Germany) with a precision of 100 gm. Sc and adolescents were measured lightly dressed without shoes.

2.11 Data management

Data for this survey was collected using a tablet-based questionnaire programmed with the survey solution (CAPI system), with paper forms serving as backup. The survey instrument was translated from English to Kiswahili for clarity, accessibility and easy comprehension during interviews.

The software was programmed with in-built checks on consistency to ensure out of range values were not entered. Samsung tablets (Galaxy Tab A SM-T585) with pre-installed questionnaires were used to collect data from study participants and capture geolocation parameter (place, latitude, longitude and altitude). The information obtained was transmitted on a daily basis to the server located at the headquarters (OCGS – Zanzibar).

Prior to the initiation of the survey, screening questions were asked to determine the eligibility of the potential respondents. After the random selection of the respondents and acquisition of informed consent, a unique identification number was provided on the survey form to identify the respondent for all subsequent study tools and information collection.

Data transmission involved the uploading of data onto to the cloud server after every data entry session. Before being downloaded, the data had to go through a chain of supervisors for verification and approval. Only valid responses were approved and sent to the server ready for cleaning and data analysis. The same data were downloaded daily from the cloud server encrypted to the local server located at the TFNC headquarters.

Internet connectivity was provided through data bundles to enable transmission of data to the cloud servers. Data backup was done using external hard disks and local servers at the headquarters. Data security was achieved through several methods including data encryption, secure file transfer and passwords.

2.11.1 Quality control

Extensive field supervision was done throughout the field work. The quality control team paired with the team to some schools to observe the student selection protocol and standard operating procedures. Data submitted by the interviewers were checked for completeness and consistency by the field supervisors. Supervisors ensured that callbacks were made to maximize the response rate. The completion of data collection in a school was followed by the data being sent to the chain of supervisors for validation and approval by the data processing team. Logic checks were installed in the CAPI system to trigger the correct responses against respondents.

In addition, there was periodic monitoring of fieldwork. Such monitoring from the headquarters ensured that the questions were asked in the right manner to elicit the correct responses. Since the survey

involved blood sample collection, the field monitors ensured that the teams had adequate logistics to undertake their assigned work without interruptions. Occasionally, the monitors had meetings with teams in the field to check the quality/quantity of work the teams undertook and advised them accordingly when there were any apparent lapses.

2.11.2 Data cleaning

Data cleaning was done by a well-trained team through screening for duplicates, incompleteness, misspelling, irrelevance and inconsistent values, which were identified and corrected. The task was accomplished using Microsoft Excel and analysed using Stata version 15 (STATA Corporation, College Station, Texas, USA).

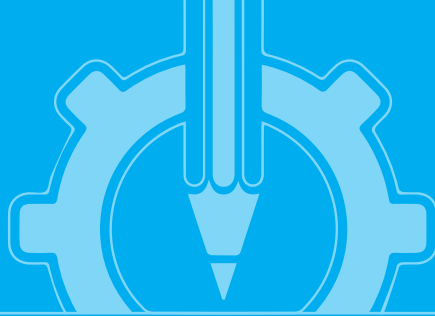
2.11.3 Data analysis

Simple descriptive analyses were assumed in Microsoft Excel for routine reporting on the schools, districts, regional authorities and OCGS. The geolocated school summary data were used to develop maps and the distribution of various indicators. Descriptive results are expressed as means for continuous variables and proportions for categorical variables.

The prevalence of anaemia was presented by showing the proportion of Hb levels based on the cut-off points by age categories and the levels of anaemia (any anaemia, severe, moderate and mild). Maps, bar charts and tables helped to illustrate the nutrition status of school children and adolescents with the interpretation made following the anthropometric measurements using the specific cut-off points for a specific age group category. Following the anthropometric measures, the proportion of severe, moderate and obesity/overweight or malnutrition across background characteristics was presented based on the specific age group. PDQS was computed and presented on bar charts based on food groups consumed by school children and adolescents in the past one week after the food groups were classified as healthy or unhealthy based on scores allocated.

The data were analysed using Stata 15 statistical package. Bivariate analysis using, chi-square test for categorical variables and T-test and ANOVA for continuous variables were conducted to assess the association between individual overall PDQS scores and socio-economic and demographic factors. We also conducted linear regression analyses to assess the predictors of PDQS scores and reported unadjusted beta coefficients and associated 95%CI.





Chapter 3

KEY FINDINGS



3.1 Response rates

A total of 2,604 primary and secondary SAC and adolescents were targeted, and about 2,556 (98.2 per cent) were successfully interviewed. Table 3 shows ZSHNS response rates for individual interviews in Zanzibar and districts. Overall, the response rate was high in all the 11 districts with Kaskazini 'B', Kati and Kusini districts having the highest rate of 100 per cent and Kaskazini 'A' the lowest at 93.9 per cent due to a larger number of refusals to participate in the survey:

Table 3 Sample size by districts, Zanzibar, ZSHNS 2022

Districts	Sampled Children/ Adolescent	Interviewed Children/Adolescent	Response Rate
Kaskazini A	196	184	93.9
Kaskazini B	196	196	100
Kati	196	196	100
Kusini	196	196	100
Mjini	280	264	94.3
Magharibi A	308	305	99
Magharibi B	336	332	98.8
Wete	252	251	99.6
Micheweni	196	195	99.5
Chake Chake	224	219	97.8
Mkoani	224	218	97.3
Total	2,604	2,556	98.2

3.2 Characteristics of the study participants

3.2.1 Demographic characteristics

Table 4 represents the demographic characteristics of the survey population. A slightly higher proportion (51.7 per cent; 1,322) of the study participants were girls. Almost 2 in 5 were individuals from the 10–14 years age group, and most of them were from primary school. Slightly over 5 in 10 were residing in urban areas.



Table 4 Social demographic characteristics of the study participants (5–19 years; N=2,556)

Background characteristics	Number	Percentage (%)
Sex		
Male	1,234	48.3
Female	1,322	51.7
Age		
5–9	784	30.7
10–14	1,058	41.4
15–19	714	27.9
Level of education		
Primary	1,768	69.1
Secondary	788	30.8
Area		
Rural	1,194	46.7
Urban	1,362	53.3
Total	2,556	100

Table 5 represents the percentage distribution of wealthy quintile among the participants.

Table 5 Wealth quintile: Percentage distribution of the de jure population by wealth quintiles, according to residence and region (N=2,556)

Variable	Number of persons	Wealth quintile				
		Lowest	Second	Middle	Fourth	Highest
Residence						
Rural	1,194	31.2	25.1	19.9	16.2	7.7
Urban	1,362	11.6	14.2	10.3	25.3	28.6
District						
Kaskazini A	184	41.3	21.7	18.5	12.5	6.0
Kaskazini B	196	29.1	25.5	24.0	12.8	8.7
Kati	196	12.2	22.5	21.4	27.6	16.3
Kusini	196	11.7	26.5	20.9	28.1	12.8
Mjini	264	2.7	5.3	19.7	29.9	42.4
Magharibi A	305	16.4	15.1	22.6	23.9	22.0
Magharibi B	332	5.1	8.7	17.8	26.2	42.2
Wete	251	31.9	24.7	20.3	14.3	8.8

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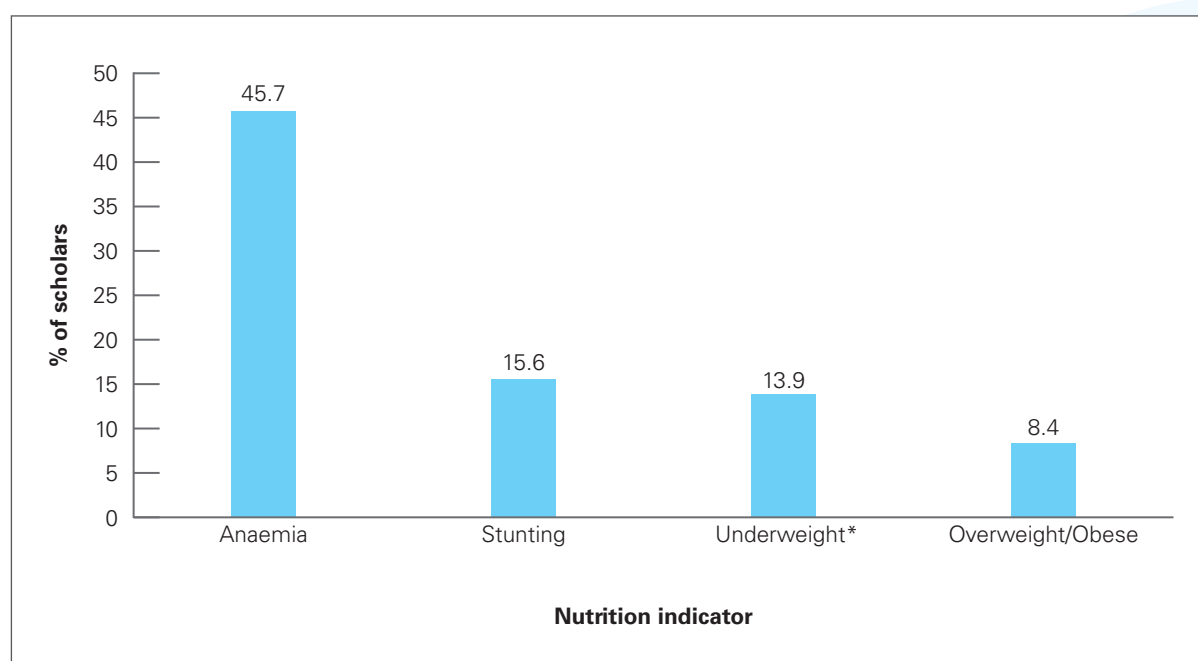
Variable	Number of persons	Wealth quintile				
		Lowest	Second	Middle	Fourth	Highest
Micheweni	195	35.9	30.3	16.9	10.3	6.7
Chake Chake	219	24.7	18.7	24.2	18.3	14.2
Mkoani	218	33.0	25.7	14.7	21.1	5.5
Region						
Kaskazini Unguja	380	35	23.7	21.3	12.6	7.4
Kusini Unguja	392	12	24.5	21.7	27.8	14.5
Mjini Magharibi	901	8.2	10	20	26.5	35.4
Kaskazini Pemba	446	33.6	27.1	18.8	12.6	7.8
Kusini Pemba	437	28.8	22.2	19.5	19.7	9.8
Total	2,556	20.7	19.2	20.1	21.1	18.9

3.3 Prevalence of malnutrition

3.3.1 Prevalence of malnutrition stratified by the type of malnutrition

Figures 1 below presents the nutritional status of children and adolescents aged 5 to 19 years stratified by the type of malnutrition and demographic characteristics. Overall, 45.7 per cent were anaemic, 15.6 per cent were stunted, 13.9 per cent were underweight and 8.4 per cent were overweight/obese.

Figure 1: Prevalence of stunting, underweight, anaemia and overweight/obesity among primary and secondary school children aged 5–19 years using WHO AnthroPlus Software (N=2,556)





Malnutrition in school-age children (5–9 years) (n=784)

- 10.2 per cent were stunted (HAZ < -2 SD)
- 14.0 per cent were underweight (WAZ < -2 SD)
- 9.2 per cent were thin (BMI-for-age < -2 SD)
- 3.2 per cent were overweight or obese (BMI-for-age > 1 SD)

Malnutrition in school-age children (10–14 years) (n=1,058)

- 19.1 per cent were stunted (HAZ < -2 SD)
- 9.6 per cent were thin (BMI-for-age < -2 SD)
- 10.5 per cent were overweight (BMI-for-age > 1 SD)

Malnutrition in adolescents (15–19 years) (n=714)

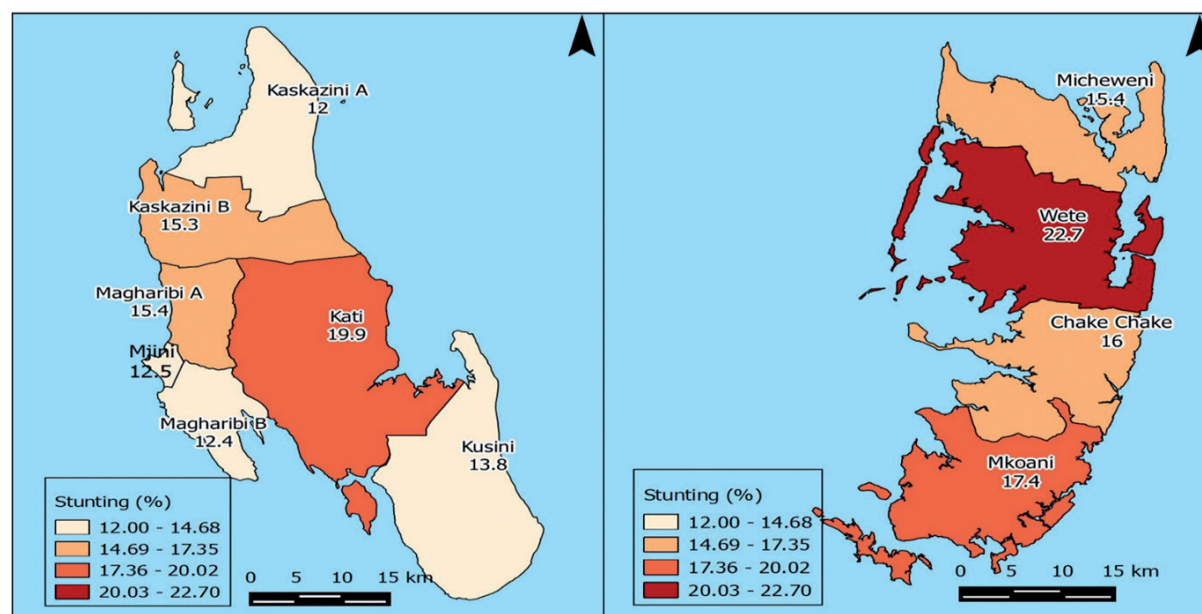
- 16.4 per cent were stunted (HAZ < -2 SD)
- 8.1 per cent were thin (BMI-for-age < -2 SD)
- 10.9 per cent were overweight (BMI-for-age > 1 SD)

3.4 Prevalence of stunting or height-for-age among SAC

3.4.1 Stunting or height-for-age among SAC by district

The stunting among SAC and adolescents stood at 15.6 per cent (see Figure 1 above) with gender and residence variation.

Figure 2: Prevalence of stunting among children and adolescents aged 5–19 years by district in Zanzibar



**Sex**

- Over 1 in 5 boys (21.0 per cent) are stunted in Zanzibar compared to 1 in 10 girls (10.6 per cent).

Districts

- The prevalence of stunting among SAC and adolescents aged 5–19 years was the lowest in Kaskazini A (12 per cent) and Magharibi B (12.4 per cent) and the highest in Wete (22.7 per cent).

3.4.2 Determinants of stunting

Table 6 below shows that the overall rates of stunting increased significantly at the early adolescents age and started to lower in late adolescence.

Table 6 Social demographic characteristics of school-teacher respondents (N=2,556)

	Number of teachers	Percentage
Ownership		
Government	88	93.6
Private	5	5.3
Level		
Primary	50	53.2
Secondary	43	45.7
District		
Chake Chake	8	8.5
Kaskazini A	7	7.4
Kaskazini B	7	7.4
Kati	7	7.4
Kusini	7	7.4
Magharibi A	11	11.7
Magharibi B	12	12.8
Micheweni	7	7.4
Mjini	10	10.6
Mkoani	8	8.5
Wete	9	9.6
Region		
Kaskazini Unguja	14	14.9
Kusini Unguja	14	14.9
Mjini Magharibi	33	35.1
Kaskazini Pemba	16	17
Kusini Pemba	16	17

3.4.3 Underweight or weight-for-age among SAC (5–10 years)

The overall prevalence of underweight among school children aged 5–10 years was 13.9 per cent.



The prevalence thresholds and patterns for underweight are as follows:

Sex

- Among SAC 5–10 years, the prevalence of underweight varied by sex with a higher percentage of underweight among boys (16.7 per cent) compared to girls (11.4 per cent).

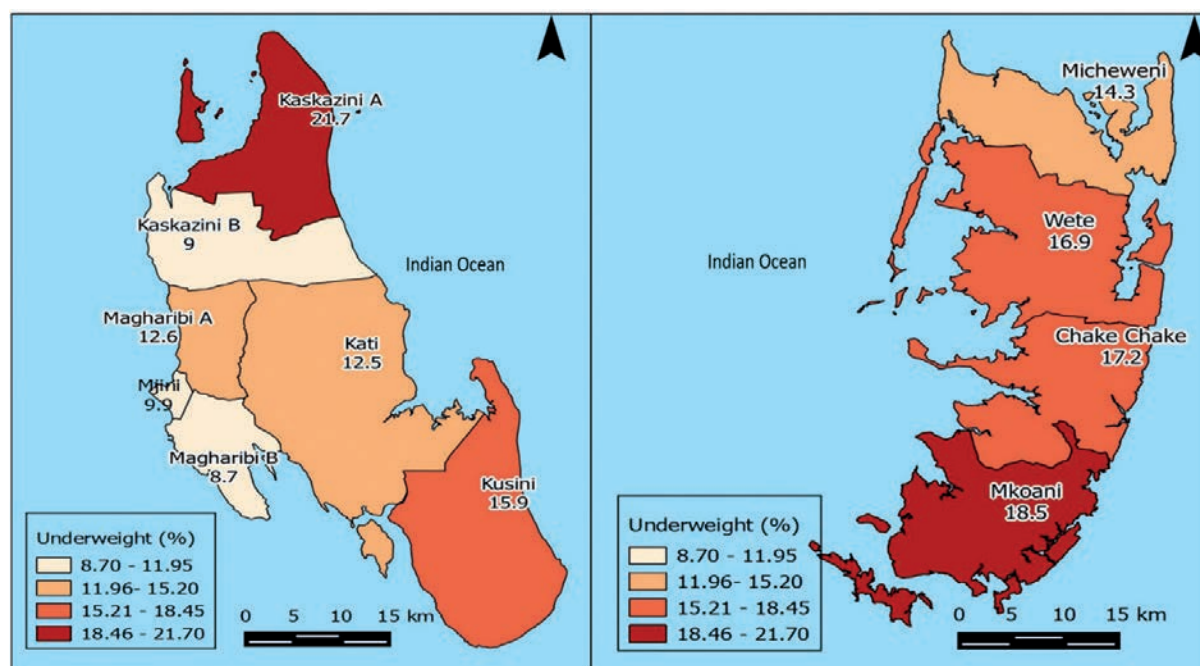
Age

- Among SAC 5–10 years, the prevalence of underweight is 13.9 per cent.

Districts

- The prevalence of underweight was the lowest in Magharibi B (8.7 per cent) and the highest in Kaskazini A (21.7 per cent) (Figure 3).

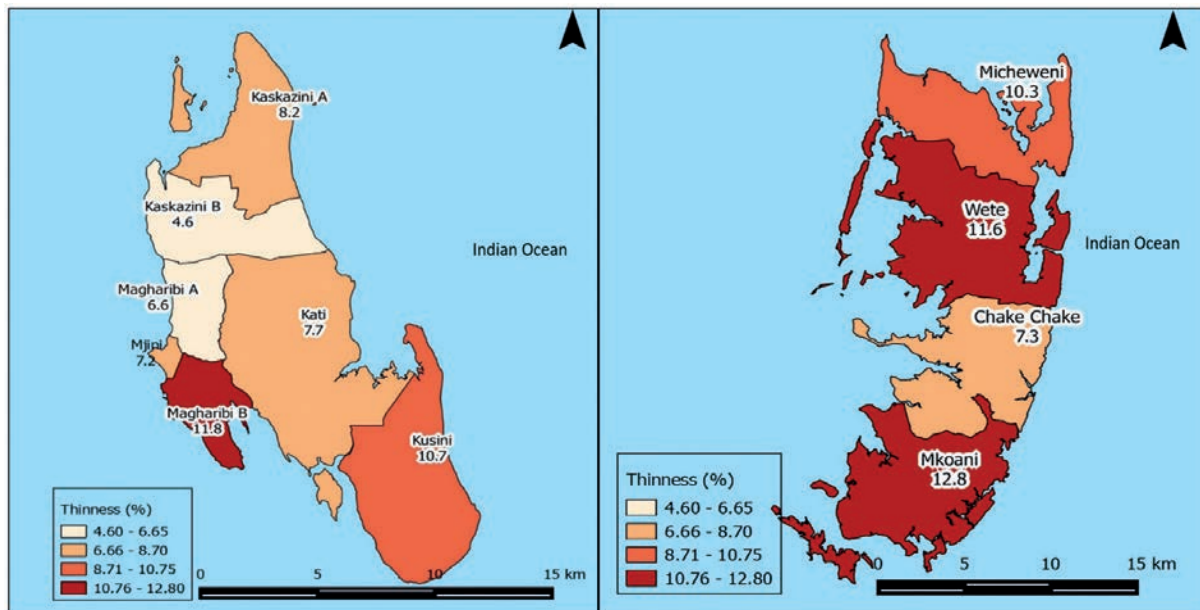
Figure 3: Prevalence of underweight among school-age children by district



3.4.4 Thinness or low BMI-for-age

The prevalence of thinness among school children was 9.0 per cent.

Figure 4: Prevalence of thinness among school-age children by district



The prevalence thresholds and patterns for thinness or low BMI-for-age are as follows:

Sex

- The prevalence of thinness was higher among boys (11.5 per cent) than girls (6.7 per cent).

Age

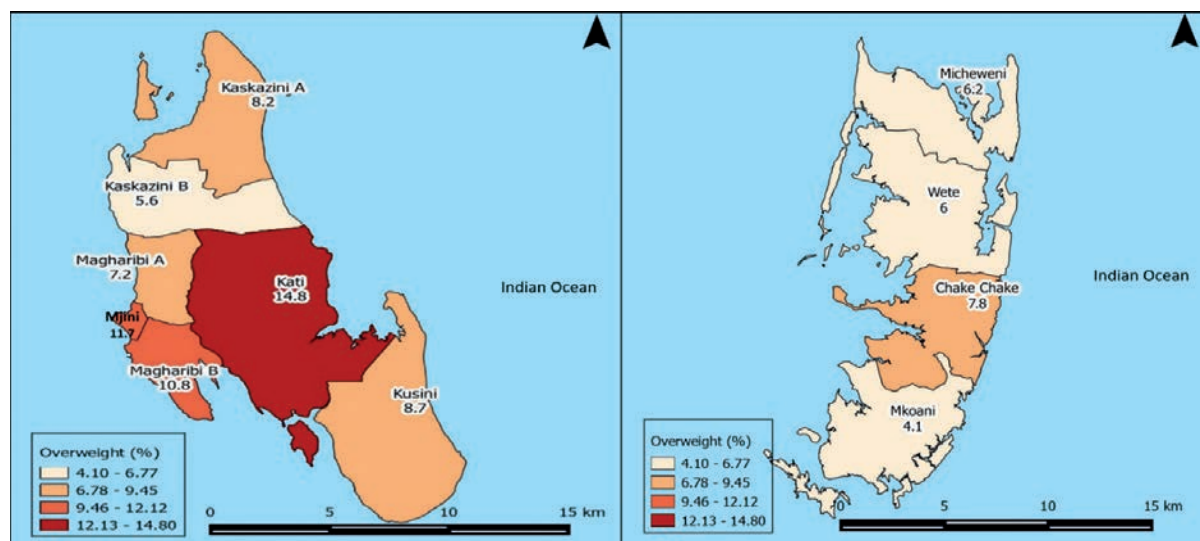
- The prevalence of thinness was highest (9.6 per cent) among 10–14 years as compared to 9.2 per cent among 5–9 years and 8.1 per cent among the older group of 15–19-year-olds.

Districts

- The prevalence of thinness was the highest in Mkoani (12.8 per cent) and the lowest in Kaskazini B (4.6 per cent).

3.4.5 Overweight children

Results for this survey indicate that only 8.4 per cent of SAC and adolescents aged 5–19 years are overweight. About 2.2 per cent of children aged 5–19 years were obese (BMI > +2 SD).

Figure 5: Prevalence of overweight among school-age children by district

The prevalence thresholds and patterns for overweight are as follows:

Sex

- The rate of obesity and overweight were higher in girls (12.3 per cent) than boys (4.1 per cent).

Age

- In contrast, SAC and adolescents in the higher age group (15–19 years) were more overweight (10.9 per cent) as compared to the younger age group of 5–9-year-olds (3.2 per cent).

Districts

- The prevalence of overweight was higher in Kati (14.8 per cent) and lowest in Mkoani (4.1 per cent).



Table 7 Proportion of children aged 5–19 years classified as malnourished according to three anthropometric indices of nutritional status

Variable	Height-for-age			Weight-for-age				BMI-for-age			
	Stunted (<2 SD)	Severe stunting (<3 SD)	n	Underweight (<2 SD)	Moderate underweight (<2 SD & ≥ 3 SD)	Severe underweight (<3)	n	Overweight (BAZ>1SD)	Obesity (BAZ>2SD)	Thinness (BAZ<2)	Severe thinness (BAZ<3)
Age in years											
5–9	10.2	1.0	784					3.2	0.6	9.2	1.8
10–14	19.1	3.2	1,058					10.5	3.0	9.6	2.2
15–19	16.4	2.2	714					10.9	2.7	8.1	1.0
Gender											
Male	21.0	3.7	1,234	16.7	13.0	3.7	377	4.1	1.0	11.5	2.8
Female	10.6	0.9	1,322	11.4	10.2	1.2	422	12.3	3.3	6.7	0.8
Ownership											
Government	15.8	2.3	2,463	13.8	11.4	2.4	793	7.8	1.8	9.1	1.8
Private	10.8	0.0	93	33.3	33.3	0.0	6	23.7	11.8	6.5	0.0
Level											
Primary	16.6	2.6	1,768	13.9	11.5	2.4	789	6.4	1.5	10.4	2.1
Secondary	13.4	1.5	788	10.0	10.0	0.0	10	12.8	3.7	6.1	0.9
Residence											
Rural	16.3	2.7	1,194	13.7	10.6	3.0	432	7.0	1.8	8.9	1.8
Urban	15.1	1.9	1,362	14.2	12.5	1.6	367	9.5	2.5	9.2	1.6
Region											
Kaskazini Unguja	13.7	1.1	380	15.4	12.5	2.9	136	6.8	2.1	6.3	0.5
Kusini Unguja	16.8	2.0	392	14.7	12.8	1.8	109	11.7	2.6	9.2	0.8

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Variable	Height-for-age			Weight-for-age				BMI-for-age				
	Stunted (<2 SD)	Severe stunting (<3 SD)	n	Underweight (<2 SD)	Moderate underweight (<2 SD & ≥ 3 SD)	Severe underweight (<3)	n	Overweight (BAZ>1SD)	Obesity (BAZ>2SD)	Thinness (BAZ<-2)	Severe thinness (BAZ<-3)	n
Mjini Magharibi	13.4	1.7	901	10.6	9.6	1.0	303	9.9	3.1	8.7	1.7	901
Kaskazini Pemba	19.5	2.7	446	15.8	10.8	5.0	139	6.1	1.1	11.0	3.6	446
Kusini Pemba	16.7	4.4	437	17.9	15.2	2.7	112	6.0	1.1	10.1	1.8	437
Island												
Pemba	18.1	3.5	883	16.7	12.8	4.0	251	6.0	1.1	10.5	2.7	883
Unguja	14.3	1.6	1,673	12.6	11.0	1.6	548	9.6	2.8	8.3	1.2	1,673
Wealth quintile												
Lowest	19.8	3.6	530	17.7	14.3	3.4	147	4.7	1.1	8.3	2.1	530
Second	14.8	2.0	493	14.7	12.9	1.8	163	6.1	0.6	9.7	0.6	493
Middle	17.0	2.9	513	17.4	13.4	4.0	201	7.4	2.0	11.5	3.7	513
Fourth	12.1	1.3	538	8.7	8.1	0.6	173	13.8	3.5	8.0	0.9	538
Highest	14.3	1.5	482	9.6	7.8	1.7	115	9.8	3.7	7.7	1.2	482
Total	15.6	2.3	2,556	13.9	11.5	2.4	799	8.4	2.2	9.0	1.7	2,556


This table is based on children with valid dates of birth (month and year) and valid measurement of both height and weight.

¹Weight-for-age reference data are not available beyond the age of 10 because this indicator does not distinguish between height and body mass during an age period when many children experience the pubertal growth spurt and may appear as having excess weight (by weight-for-age) when in fact they are just tall. As such, weight-for-age analysis in this report was done only covering 5 to 10 years.

NA: Not Applicable

3.4.6 Determinants of underweight and overweight/obesity among children and adolescents aged 5–19 years

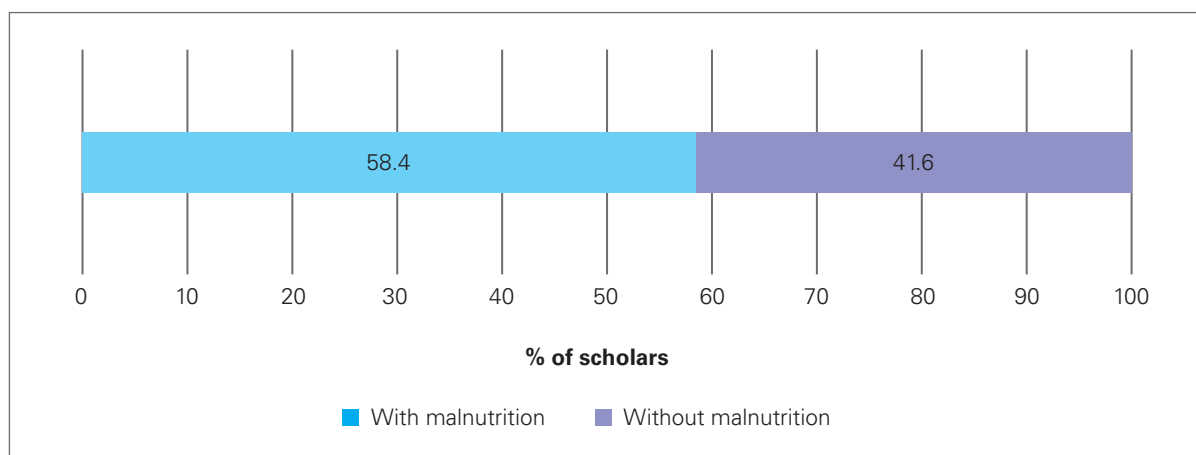
The results of factors associated with overweight/obesity are as shown in Table 8.

 Table 8 Determinants of underweight and overweight/obesity using CDC percentile calculator stratified by socioeconomic and demographic characteristics				
Variable	Underweight vs normal, UPR 95% CI	p-value	Overweight/obese vs normal, UPR 95% CI	p-value
Age in years				
5–9	1		1	
10–14	0.6 (0.5–0.8)	<0.001	3.7 (2.2–6.3)	<0.001
15–19	0.6 (0.5–0.8)	<0.001	3.8 (2.2–6.6)	<0.001
Gender				
Male	1.7 (1.4–2.1)	<0.001	0.3 (0.2–0.5)	<0.001
Female	1		1	
Ownership				
Private	1.1 (0.6–1.9)	0.875	3.8 (2.2–6.5)	<0.001
Government	1		1	
Level				
Primary	1.8 (1.4–2.3)	<0.001	0.5 (0.4–0.7)	<0.001
Secondary	1		1	
Residence				
Rural	1.1 (0.9–1.4)	0.231	0.8 (0.6–1.1)	0.109
Urban	1		1	
Region				
Kaskazini Unguja	1		1	
Kusini Unguja	1.1 (0.7–1.5)	0.767	2.2 (1.3–3.8)	0.005
Mjini Magharibi	1.0 (0.7–1.4)	0.953	1.3 (0.8–2.2)	0.308
Kaskazini Pemba	1.1 (0.8–1.6)	0.614	0.7 (0.4–1.4)	0.345
Kusini Pemba	1.1 (0.8–1.6)	0.547	0.8 (0.4–1.6)	0.583
Wealth quintile				
Lowest	1.2 (0.8–1.7)	0.328	0.5 (0.3–0.8)	0.004
Second	1.3 (0.9–1.8)	0.135	0.5 (0.3–0.8)	0.008
Middle	1.6 (1.2–2.3)	0.003	0.7 (0.4–1.2)	0.214
Fourth	1.3 (0.9–1.8)	0.208	1.4 (0.9–2.2)	0.111
Highest	1		1	

3.5 Overall prevalence of malnutrition

Overall, the prevalence of malnutrition defined as malnutrition of any kind (stunting, underweight, thinness, overweight or anaemia) in Zanzibar was 58.4 per cent (Figure 6). At least 44.6 per cent of children had one form of malnutrition (Figure 6).

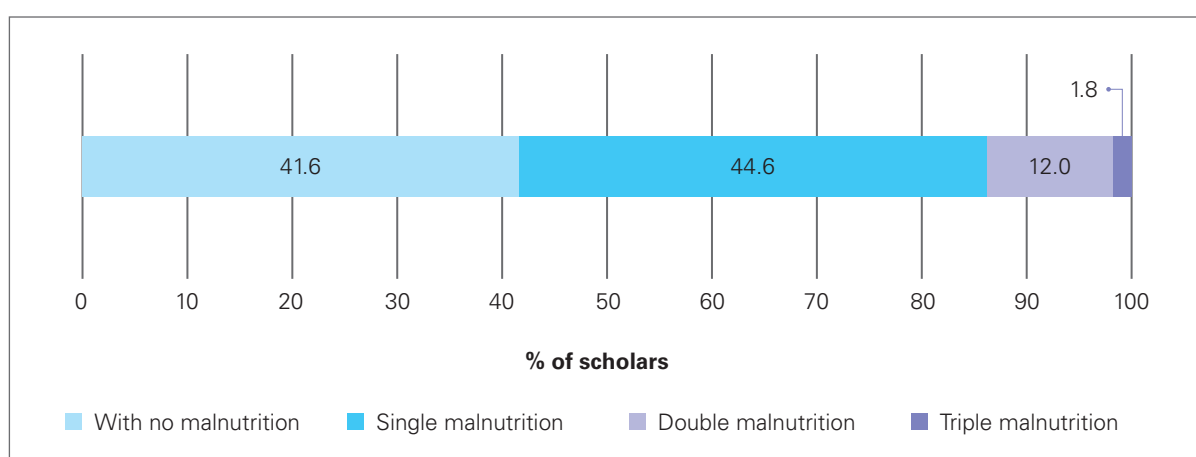
Figure 6: Proportion of children and adolescents aged 5–19 years with and without malnutrition in Zanzibar (N=2,556)



3.5.1 Prevalence of multiple forms of malnutrition


The overall prevalence of double burden of malnutrition (DBM) characterized by the coexistence of both undernutrition and overnutrition was observed to be 12.0 per cent in Zanzibar. Similarly, the overall prevalence of triple burden of malnutrition defined as the simultaneous presence of undernutrition, micronutrient deficiencies and overnutrition in Zanzibar was 1.8 per cent (refer to Figure 7 for graphical representation).

Figure 7: Proportion of children and adolescents aged 5–19 years stratified by single and multiple malnutrition (N=2,556)



3.5.2 Determinants of single and multiple (double and triple) malnutrition in Zanzibar

Table 9 describes the predictors of single and multiple malnutrition among primary and secondary school children and adolescents aged 5–19 years in Zanzibar.

 Table 9 Predictors of single and multiple malnutrition among primary and secondary school scholars in Zanzibar (N=2,556)				
Variable	Single malnutrition vs normal, APR 95% CI	p-value	Multiple malnutrition vs normal, APR 95% CI	p-value
Age in years				
5–9	1		1	
10–14	0.9 (0.7–1.1)	0.290	0.9 (0.7–1.2)	0.487
15–19	0.9 (0.7–1.1)	0.374	1.0 (0.7–1.3)	0.879
Gender				
Male	1		1	
Female	1.4 (1.2–1.6)	<0.001	0.9 (0.7–1.2)	0.578
Ownership				
Private	0.7 (0.4–1.0)	0.075	0.8 (0.4–1.5)	0.406
Government	1		1	
Level				
Primary	1.0 (0.8–1.2)	0.900	1.0 (0.8–1.3)	0.980
Secondary	1		1	
Settings				
Rural	1.1 (0.9–1.2)	0.492	1.0 (0.8–1.3)	0.715
Urban	1		1	
Region				
Kaskazini Unguja	1		1	
Kusini Unguja	1.0 (0.8–1.4)	0.898	1.4 (0.9–2.1)	0.173
Mjini Magharibi	0.8 (0.6–1.0)	0.098	0.9 (0.6–1.3)	0.604
Kaskazini Pemba	0.9 (0.6–1.2)	0.339	1.3 (0.8–1.9)	0.315
Kusini Pemba	0.9 (0.7–1.2)	0.394	1.5 (1.01–2.4)	0.046
Wealth quintile				
Lowest	1.2 (0.9–1.6)	0.120	1.5 (1.03–2.2)	0.032
Second	1.1 (0.9–1.5)	0.428	1.2 (0.8–1.7)	0.499
Middle	1.3 (1.0–1.7)	0.055	1.3 (0.9–1.9)	0.234
Fourth	1.2 (0.9–1.6)	0.171	1.2 (0.8–1.7)	0.425
Highest	1		1	

3.6 Anaemia

Overall, almost half of school children and adolescents 5–19 years in Zanzibar are anaemic with a 45.7 per cent prevalence (Figure 8).

Figure 8: Prevalence of anaemia among children and adolescents aged 5–19 years in Zanzibar

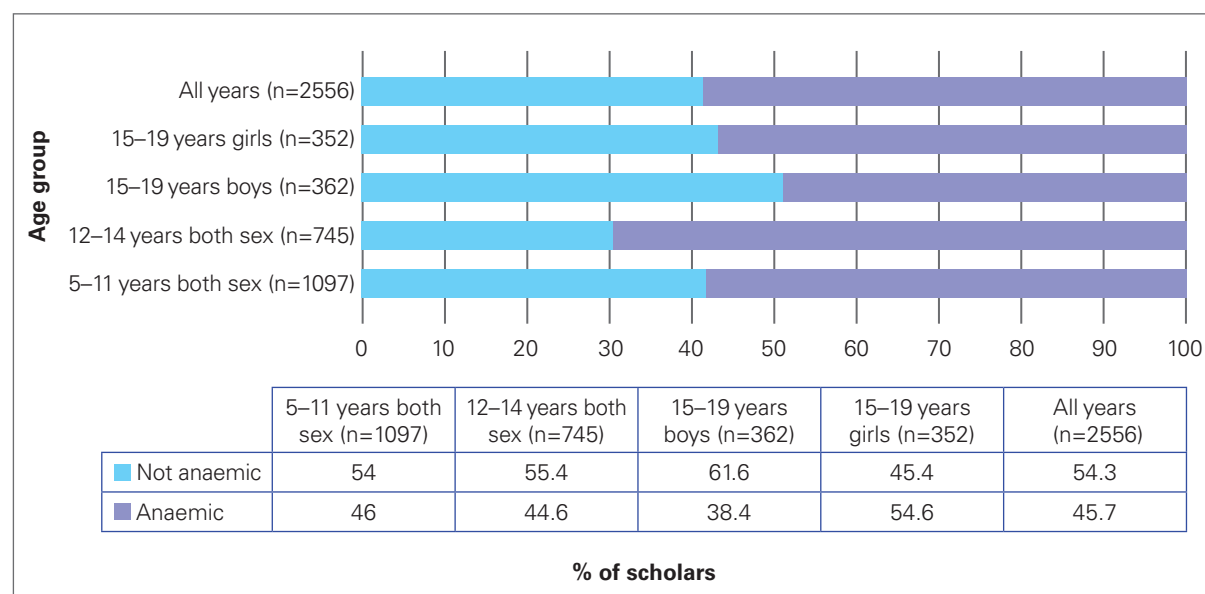
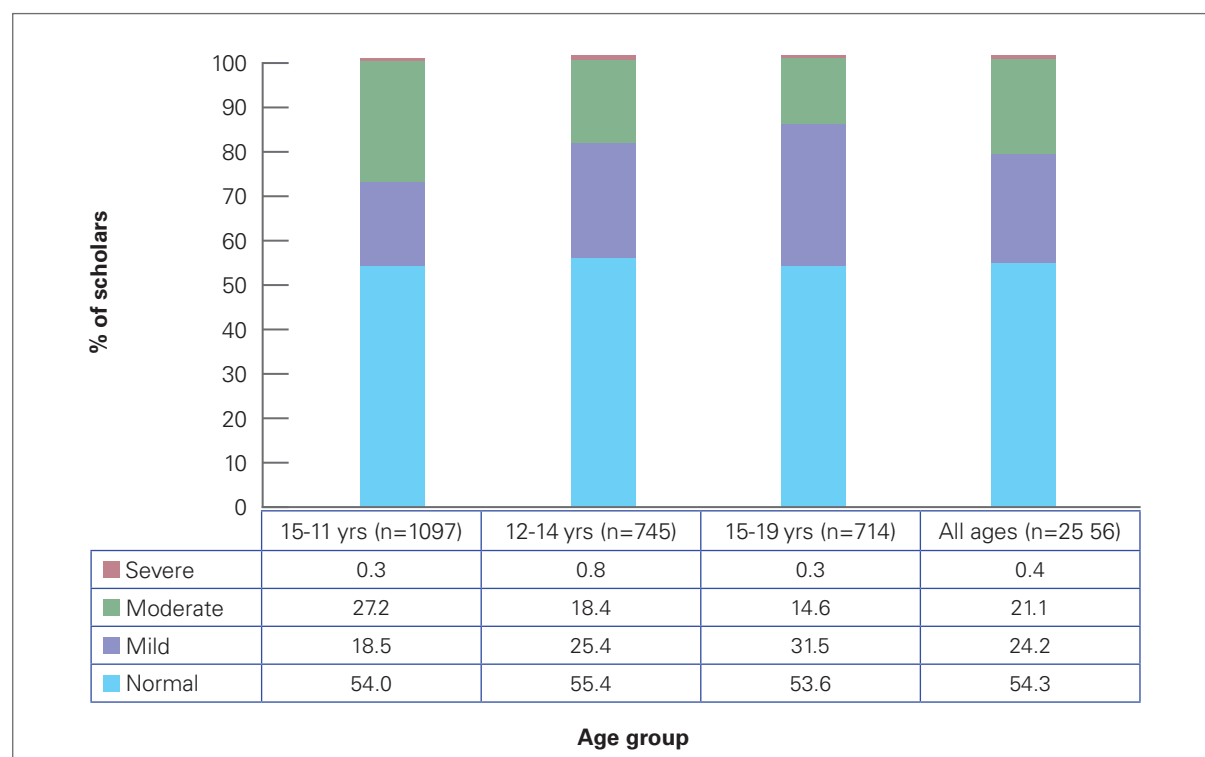


Figure 9 describes the level of anaemia among children and adolescents aged 5–19 years. Almost one in four children had mild anaemia followed by moderate (21.1 per cent). The prevalence of severe anaemia was 0.4 per cent with slight variation according to age.

Figure 9: Level of anaemia among children and adolescents aged 5–19 years in Zanzibar



The prevalence thresholds and patterns of anaemia vary across various demographic characteristics as detailed below:

Sex

The majority of the girls in both age groups were anaemic.

- Among school children aged 5–11 years, 46.1 per cent of the girls were anaemic compared to 45.9 per cent of the boys.
- Likewise, among adolescents aged 12–14 years, girls (47.0 per cent) were more anaemic than boys (41.9 per cent).
- Moreover, among adolescents aged 15–19 years, girls (54.6 per cent) were more anaemic than boys (38.4 per cent).

Age

- Overall, 46.0 per cent, 44.6 per cent and 43.6 per cent of school children and adolescents aged 5–11, 12–14 and 15–19 years respectively were anaemic.

Districts

- Anaemia varied by district. It was the highest in Mkoani (57.3 per cent) and Kaskazini A (53.3 per cent) and lowest in Mjini (37.9 per cent).



Table 10

Prevalence of anaemia among children and school adolescents aged 5–19 years stratified by background characteristics, ZSHNS 2022 (N=2,556)

Variable	Children aged 5–11 years					Teenagers aged 12–14 years					Adolescents aged 15–19 years					Any Anaemia	
	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	n	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	n	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	n	n	%
Gender																	
Male	54.1	17.7	27.6	0.6	514	58.1	23.7	17.9	0.3	358	61.6	31.2	7.2	0.0	362	1,234	42.5
Female	53.9	19.4	26.7	0.0	583	53	26.9	18.8	1.3	387	45.4	31.8	22.2	0.6	352	1,322	48.6
Ownership																	
Government	54.0	18.6	27.1	0.3	1,090	54.3	25.9	18.9	0.9	703	52.1	32.4	15.2	0.3	670	2,463	46.4
Private	42.9	14.3	42.8	0.0	7	73.8	16.7	9.5	0.0	42	77.3	18.2	4.5	0.0	44	93	26.9
Level																	
Primary	53.7	18.7	27.3	0.3	1,079	57.6	24.0	17.6	0.8	575	47.4	39.4	13.2	0.0	114	1,763	45.4
Secondary	66.7	11.1	22.2	0.0	18	48.2	30.0	21.2	0.6	170	54.8	30.0	14.9	0.3	600	788	46.3
Settings																	
Rural	52.2	19.3	28.2	0.3	590	55.1	23.8	20.2	0.9	341	54.0	32.7	12.9	0.4	263	1,194	46.6
Urban	56.0	17.8	26.0	0.2	507	55.7	26.7	16.8	0.8	404	53.4	30.8	15.5	0.3	451	1,362	44.9
District																	
Kaskazini A	31.5	19.2	47.9	1.4	73	60.8	17.7	15.7	5.8	51	53.3	31.7	15.0	0.0	60	184	53.3
Kaskazini B	54.4	20.0	25.6	0.0	90	63.5	20.6	15.9	0.0	63	58.1	25.6	16.3	0.0	43	196	41.8
Kati	63.3	15.2	21.5	0.0	79	51.4	26.5	20.6	1.5	68	51.0	34.7	14.3	0.0	49	196	43.9
Kusini	56.0	16.5	27.5	0.0	109	51.5	36.4	12.1	0.0	33	44.4	50.0	5.6	0.0	54	196	48.0
Mijini	64.9	14.4	20.7	0.0	111	56.4	25.4	18.2	0.0	55	62.2	24.5	13.3	0.0	98	264	37.9
Magharibi A	53.2	17.3	28.2	1.3	156	67.6	18.9	12.2	1.3	74	44.0	32.0	24.0	0.0	75	305	45.6
Magharibi B	55.8	18.1	26.1	0.0	138	61.1	20.6	18.3	0.0	131	57.1	30.2	12.7	0.0	63	332	41.9
Wete	56.9	19.8	23.3	0.0	116	53.5	24.0	21.1	1.4	71	39.1	37.5	23.4	0.0	64	251	48.6

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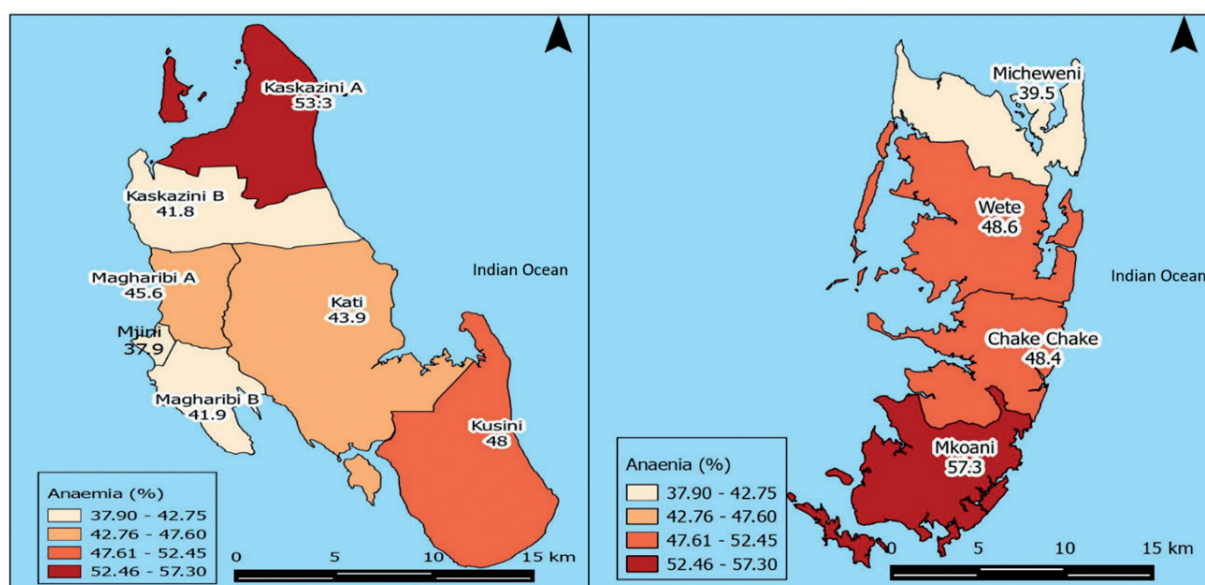
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Variable	Children aged 5–11 years					Teenagers aged 12–14 years					Adolescents aged 15–19 years					Any Anaemia	
	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	n	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	n	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	n	n	%
Micheweni	63.8	18.8	17.4	0.0	69	58.3	29.2	12.5	0.0	48	59.0	32.0	9.0	0.0	78	195	39.5
Chake Chake	44.4	25.6	30.0	0.0	90	58.0	20.3	21.7	0.0	69	55.0	30.0	15.0	0.0	60	219	48.4
Mkoani	40.9	22.7	36.4	0.0	66	28.1	45.1	26.8	0.0	82	61.4	24.3	11.4	2.9	70	218	57.3
Region																	
Kaskazini Unguja	44.2	19.6	35.6	0.6	163	62.3	19.3	15.8	2.6	114	55.3	29.2	15.5	0.0	103	380	47.4
Kusini Unguja	59.0	16.0	25.0	0.0	188	51.5	29.7	17.8	1.0	101	47.6	42.7	9.7	0.0	103	392	45.9
Mjini Magharibi	57.3	16.8	25.4	0.5	405	61.9	21.2	16.5	0.4	260	55.1	28.4	16.5	0.0	236	901	42.0
Kaskazini Pemba	59.5	19.5	21.0	0.0	185	55.5	26.1	17.7	0.7	119	50.0	34.5	15.5	0.0	142	446	44.6
Kusini Pemba	42.9	24.4	32.7	0.0	156	41.7	33.8	24.5	0.0	151	58.5	26.9	13.1	1.5	130	437	52.9
Wealth quintile																	
Lowest	47.3	16.7	35.5	0.5	203	53.0	21.6	24.9	0.5	181	50.0	35.6	14.4	0.0	146	530	50.0
Second	53.2	19.1	27.7	0.0	220	54.8	28.0	15.1	2.1	146	52.0	34.6	12.6	0.8	127	493	46.6
Middle	53.7	19.8	26.5	0.0	257	55.4	29.5	15.1	0.0	139	55.6	26.5	17.9	0.0	117	513	45.4
Fourth	57.1	19.2	23.7	0.0	245	55.3	25.5	17.7	1.5	141	54.0	29.0	16.3	0.7	152	538	44.2
Highest	58.7	17.4	22.7	1.2	172	59.4	23.2	17.4	0.0	138	56.4	31.4	12.2	0.0	172	482	41.9
Total	54.0	18.5	27.2	0.3	1,097	55.4	25.4	18.4	0.8	745	56.4	31.4	12.2	0.0	172	2,556	45.7

Note: Prevalence of anaemia, based on Hb levels, is adjusted for altitude (above 1,000 metres). Anaemia levels are classified according to age and sex of adolescents.

- For adolescent boys: Severe anaemia <8.0 g/dl; moderate anaemia 8.0–10.9 g/dl; mild anaemia 11.0–11.9 g/dl for 10–11 years, 11.0–11.9 g/dl for 12–14 years and 11.0–12.9 g/dl for 15–19 years; any anaemia <11.5 g/dl for 10–11 years, <12.0 g/dl for 12–14 years and <13.0 g/dl for 15–19 years.
- For adolescent girls: Severe anaemia <8.0 g/dl; moderate anaemia 8.0–10.9 g/dl; mild anaemia 11.0–11.4 g/dl for 10–11 years, 11.0–11.9 g/dl for 12–14 years and 11.0–11.9 g/dl for 15–19 years; any anaemia <11.5 g/dl for 10–11 years, <12.0 g/dl for 12–14 years and <12.0 g/dl for 15–19 years.
- Hb levels are shown in grams per decilitre (g/dl).

Source: Hb concentration for diagnosis of anaemia and assessment of severity, Geneva, WHO, 2011

Figure 10: Prevalence of anaemia among children and adolescents aged 5–19 years by district.

3.6.1 Determinants of anaemia among children and adolescents aged 5–19 years in Zanzibar

Table 11 describes factors associated with anaemia in Zanzibar.

Table 11 Level of anaemia by socioeconomic and demographic characteristics of students

Variable	UPR 95% CI	p-value
Age in years		
5–9	1.3 (1.1–1.4)	<0.001
10–14	1	
15–19	1.1 (1.02–1.3)	0.023
Gender		
Male	1	
Female	1.1 (1.05–1.3)	0.002
Ownership		
Private	1	
Government	1.7 (1.2–2.4)	0.002
Level		
Primary	1.0 (0.9–1.1)	0.672
Secondary	1	
Settings		
Rural	1.0 (0.9–1.1)	0.408
Urban	1	
Region		
Kaskazini Unguja	1	

Variable	UPR 95% CI	p-value
Kusini Unguja	1.0 (0.8–1.1)	0.686
Mjini Magharibi	0.9 (0.8–1.0)	0.069
Kaskazini Pemba	0.9 (0.8–1.1)	0.429
Kusini Pemba	1.1 (1.0–1.3)	0.120
Wealth quintile		
Lowest	1.2 (1.04–1.4)	0.011
Second	1.1 (1.0–1.3)	0.137
Middle	1.1 (0.9–1.3)	0.266
Fourth	1.1 (0.9–1.2)	0.454
Highest	1	

3.7 Food consumption

The frequency thresholds of consumption of healthy food groups for at least >4 serving per week among SAC are as described in Table 12 below:



- Less than half of SAC and adolescent consumed fish (48 per cent), other vitamin A rich vegetables and fruits (69.8 per cent) and dark leafy green vegetables (56.7 percent) for at least >4 servings per week.
- Eggs (1.6 per cent), cruciferous vegetables (1.8 per cent) and other whole fruits (3.9 per cent) were the least consumed.

The frequency thresholds of consumption of six unhealthy food groups for at least >4 servings per week among SAC are as follows:

- Over two in five SAC and adolescents consumed refined grains and baked goods (40.9 per cent) and desserts and ice cream (26.0 per cent). Moreover, about 25.9 per cent consumed fried foods obtained from outside home for at least >4 servings per week.
- **Processed meat (0.7 per cent) and red meat (2.4 per cent) were the least consumed.**

Table 12 Frequency distribution of PDQS among SAC in Zanzibar (N=2,556)

Food group	0–1 serving/week		2–3 servings/week		≥4 serving/week	
	n	per cent	n	per cent	n	per cent
Healthy food groups						
Dark green leafy vegetables	1,080	42.3	1,259	49.3	217	8.5
Cruciferous vegetables	2,271	88.9	239	9.4	46	1.8
Rich vegetable and fruits	594	23.2	965	37.8	997	39.0
Other vegetables	1,346	52.7	699	27.4	511	20.0
Fruits whole citrus	2,110	82.6	339	13.3	107	4.2

Food group	0–1 serving/week		2–3 servings/week		≥4 serving/week	
	n	per cent	n	per cent	n	per cent
Other whole fruits	2,089	81.7	367	14.4	100	3.9
Legumes	1,437	56.2	979	38.3	140	5.5
Nuts	1,811	70.9	558	21.8	187	7.3
Poultry	2,045	80.0	444	17.4	67	2.6
Fish	401	15.7	928	36.3	1,227	48.0
Whole grains	1,959	76.6	347	13.6	250	9.8
Liquid vegetable oils	1,281	50.1	805	31.5	470	18.4
Eggs Freq.	2,186	85.5	328	12.8	42	1.6
Unhealthy food groups						
Red meats	2,204	86.2	291	11.4	61	2.4
Processed meat	2,478	97.0	60	2.4	18	0.7
Refined grains and baked goods	945	37.0	567	22.2	1,044	40.9
Sugar-sweetened beverages	2,007	78.5	417	16.3	132	5.2
Fried foods	1,222	47.8	672	26.3	662	25.9
Ice cream	1,065	41.7	806	31.5	685	26.8
Roots and tubers (cooked potatoes)	1,492	58.4	888	34.7	176	6.9
Low-fat dairy: drinking milk or milk products (e.g. yoghurt)	2,036	79.7	378	14.8	142	5.6

Note: The mean PDQS was 16.4±3.7 with min=7 and max=34 out of 42 possible scores.

3.7.1 Dietary habits among SAC

Our study findings reveal that overall, in the previous seven days leading up to the survey, 50.4 per cent of the children and adolescents aged 5–19 years in Zanzibar never had breakfast; only 2 per cent reported eating outside home for at least three or more times a week, and 56.6 per cent eat snacks almost every day (see figures 11 and 12).

Figure 11: Number of times SAC had breakfast in the last month

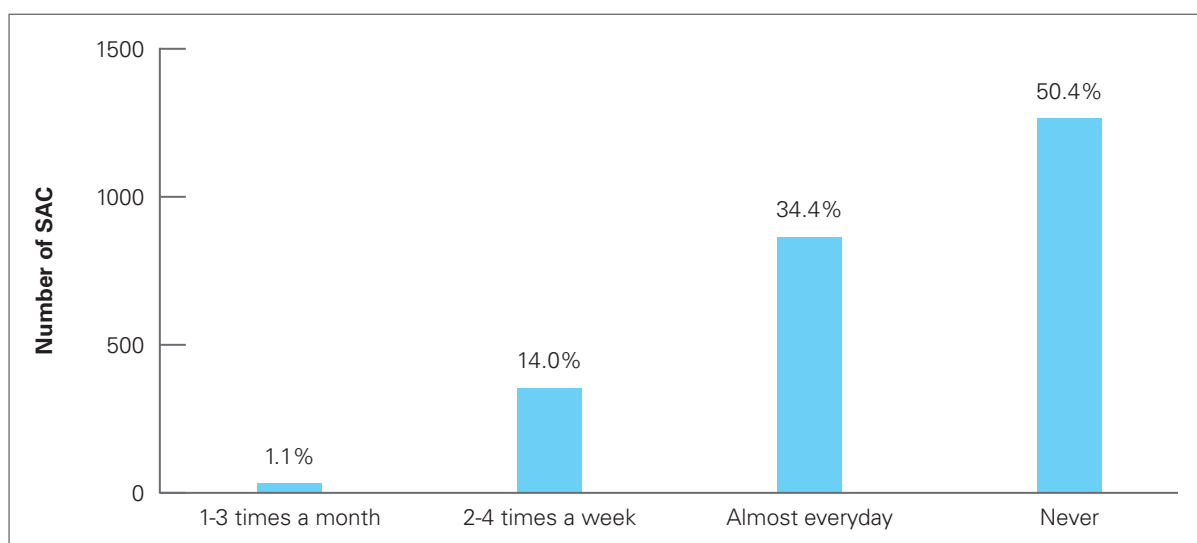
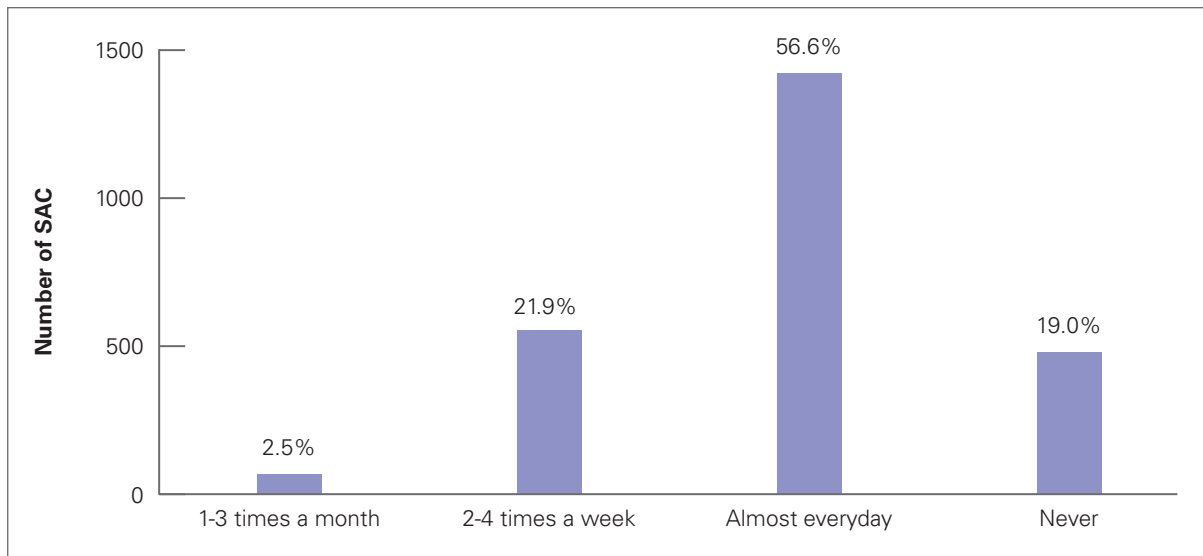


Figure 12: Number of times SAC had snack in the previous month

Eating breakfast

Sex

- Missing breakfast was almost similar for both genders, boys and girls; however, the proportion is slightly higher for boys (51.1 per cent) than for girls (49.8 per cent), who reported having missed breakfast in the last seven days before the survey.

Age

- Among SAC who did not have breakfast at all in the last seven days before the survey, children in early adolescence aged 10–14 years were more likely to miss breakfast (53.5 per cent) compared to the youngest aged 5–9 years (48.3 per cent) and the older group aged 15–19 years (48.2 per cent).

Districts

- Among children, having breakfast is very heterogeneous across districts. The study findings indicate that more than half of the SAC and adolescents 5–19 years from Kati (56.1 per cent), Magharibi B (56.6 per cent) and Micheweni (57.4 per cent) had not had any breakfast in the past seven days.

Snacking

Sex

- Among SAC who ate snacks almost every day, the majority were girls (60.1 per cent) compared to boys (52.8 per cent).

Age

- A high proportion of younger school age children (62.9 per cent) reported eating snacks at school on a daily basis compared to children in early adolescence (56.4 per cent) and older children (50 per cent).
- By district, eating snacks in school almost daily was observed to be higher among school children and adolescents aged 5–19 years from Chake Chake (79.9 per cent), Mkoani (76.6 per cent) and Mjini (59.5 per cent) whereas the lowest was Kaskazini A (42.4 per cent).



3.8 Physical activity

Overall, the results indicate that 61.9 per cent (n=1582) of the school children and adolescents aged 5–19 years engaged in some form of physical activity. The following dataset and Table 13 delineate the prevalence of low, moderate and high physical activity levels among SAC and adolescents aged 5–19 years by background characteristics:

Sex and age

- The prevalence of high physical activity levels was higher among older children aged 15–19 years (40 per cent) than younger ones and adolescents. Low physical activity levels were observed in girls (53 per cent) versus boys (47 per cent). Boys were more engaged in physical activities than the girls.

Residence

- Overall, physical activity levels were reported to be moderate in all the Zanzibari regions with 2 in 3 school children and adolescents aged 5–19 years being active. Urban children were more highly active (56 per cent) than their rural counterparts (44 per cent).

Regions

- Among all the regions of Zanzibar surveyed for average physical activity levels, respondents from Mjini Magharibi reported the highest level of activities (31 per cent) while those from Kaskazini Unguja reported the least (12 per cent).



Table 13 Physical activity and background information on SAC and adolescents

Variable	Low		Moderate		High	
	number	%	number	%	number	%
Gender						
Girls	816	53	909	51	262	33
Boys	725	47	863	49	535	67
Age						
5–9	61	4	0	0	0	0
10–14	900	58.4	1058	58	437	0
15–19	580	37.6	714	40	360	40
Setting						
Rural	700	45.4	769	43	354	44
Urban	841	54.6	1003	57	443	56
District						
Chake Chake	152	9.9	162	9	93	12
Kaskazini A	86	5.6	119	7	49	6
Kaskazini B	118	7.7	131	7	45	6
Kati	131	8.5	165	9	63	8
Kusini	101	6.6	122	7	42	5

Variable	Low		Moderate		High	
	number	%	number	%	number	%
Magharibi A	149	9.7	188	11	100	13
Magharibi B	188	12.2	229	13	77	10
Micheweni	129	8.4	139	8	82	10
Mjini	150	9.7	184	10	71	9
Mkoani	170	11	164	9	86	11
Wete	167	10.8	169	10	89	11
Region						
Kaskazini Pemba	296	19.2	308	17	171	22
Kaskazini Unguja	204	13.2	250	14	94	12
Kusini Pemba	322	20.9	326	18	179	23
Kusini Unguja	232	15.1	287	16	105	13
Mjini Magharibi	487	31.6	601	34	248	31

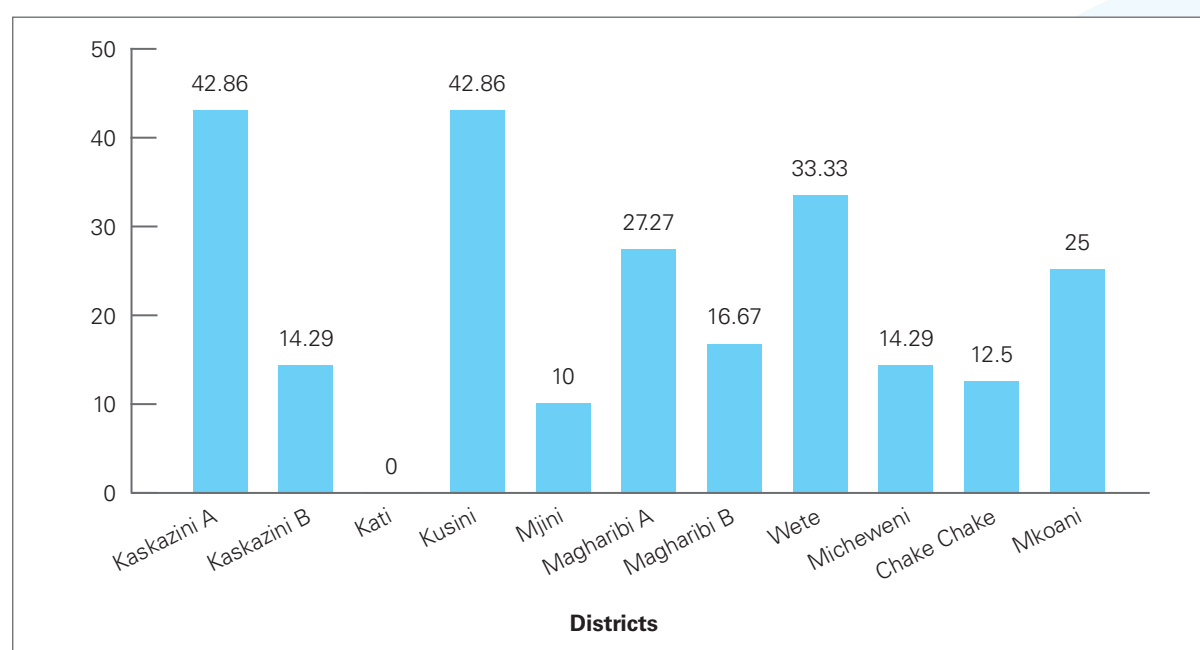
3.9 School nutrition programmes

The analysis revealed that only 22 per cent of the schools visited reported to have some sort of school nutrition programme (SNP). Implicitly, the SAC in most of the schools had limited access to school meals, micro-nutrient supplementation, physical exercise and sport, as well as school health infrastructure.

3.9.1 SNP by district

The survey reveals district-based variations in the schools that offer meals in school, with 40 per cent offering meals at schools located, in only 2 out of 11 districts. These two districts are Kaskazini A and Kusini. None of the schools were reported to have a nutrition programme in Kati district, as Figure 13 illustrates.

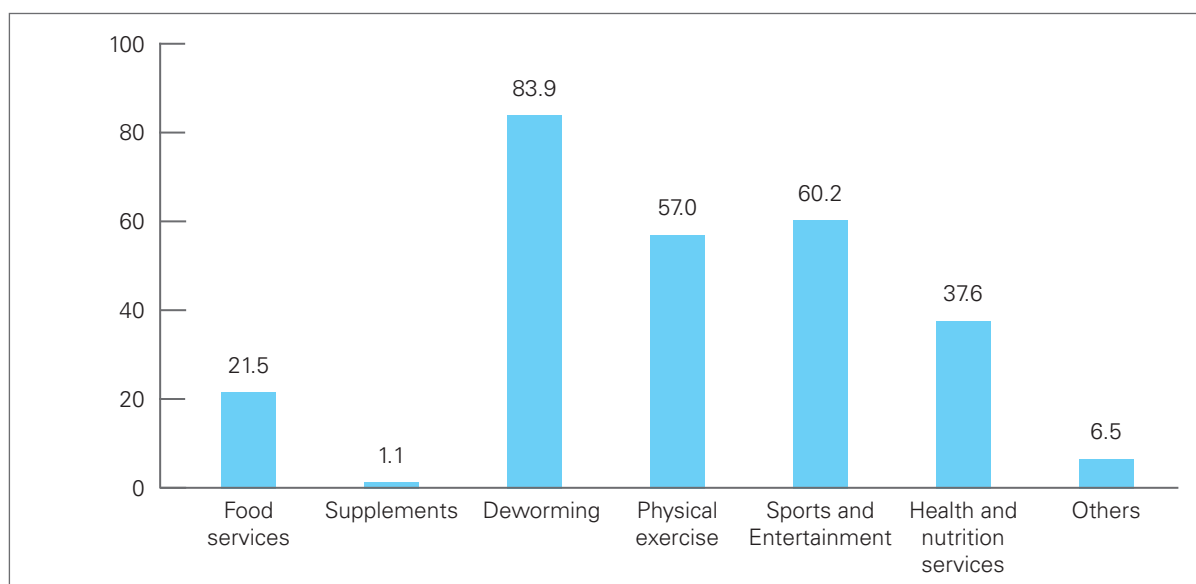
Figure 13: Percentage distribution of schools offering meals in Zanzibar by district



3.9.2 Status of SNP in Zanzibar

The survey assessed the status of the SNP components. The results indicate that among the schools with a SNP, the majority have deworming services (83.9 per cent), sports and entertainments (60.2 per cent), and lowest micro-nutrients supplementation (1.1 per cent), as Figure 14 further demonstrates:

Figure 14: Services offered through SNPs in Zanzibar



3.10 School environment assessment

3.10.1 School health infrastructure in Zanzibar

Most of the schools (93.3 per cent) reported having clean water, hand washing facilities (75.3 per cent) and clean and safe drinking water treated using water guard tablets and chlorination by Zanzibar Water Authority (69.9 per cent). Conversely, only a minute number (4.3 per cent) reported having dining halls and a few others (9.7 per cent) indicated food stores while a significant minority (30.1 per cent) cited the school kitchen, as Figure 15 illustrates.

Figure 15: Health infrastructure in schools

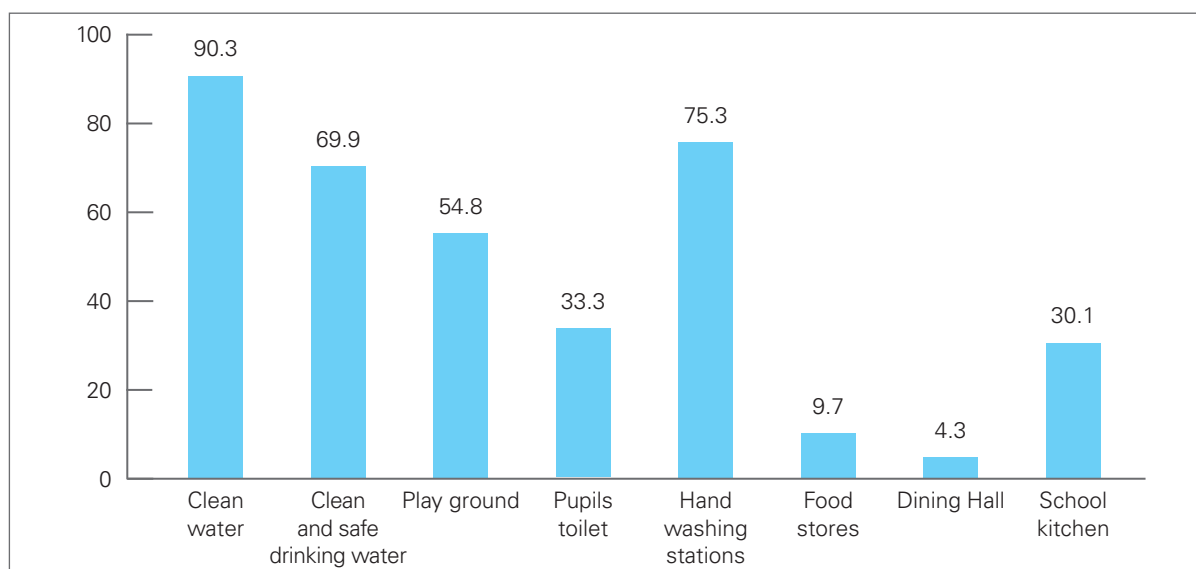


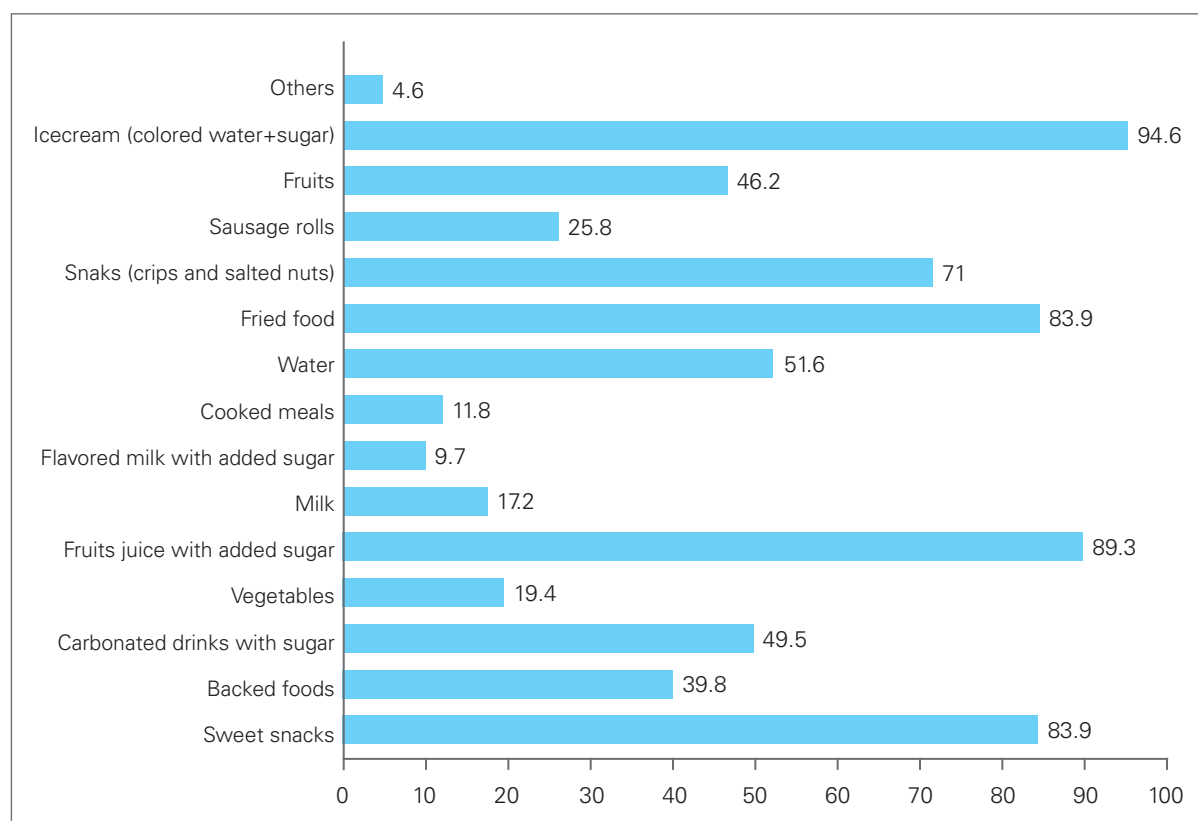
Table 14 School health infrastructure by district

Name of districts	Clean water	Clean and safe drinking water	Playgrounds	Hand washing stations	Food stores	Dining hall	School kitchen
Kaskazini A	71.4	57.1	57.1	57.1	14.3	0	42.9
Kaskazini B	85.7	42.9	42.9	100	0	0	28.6
Kati	100	71.4	57.1	85.7	0	0	57.1
Kusini	100	57.1	71.4	57.1	0	0	28.6
Mjini	80	70	30	80	10	20	20
Magharibi A	100	81.8	63.6	81.8	9.1	0	18.2
Magharibi B	83.3	50	41.7	91.7	33.3	16.7	41.7
Wete	100	88.9	55.6	88.9	11.1	0	33.3
Micheweni	85.7	71.4	71.4	71.4	14.3	0	14.3
Chake Chake	87.5	87.5	75	62.5	0	0	37.5
Mkoani	100	87.5	50	37.5	0	0	12.5

3.10.2 Types of food available from different food vendors around schools

Figure 16 presents the results of types of foods available in schools.

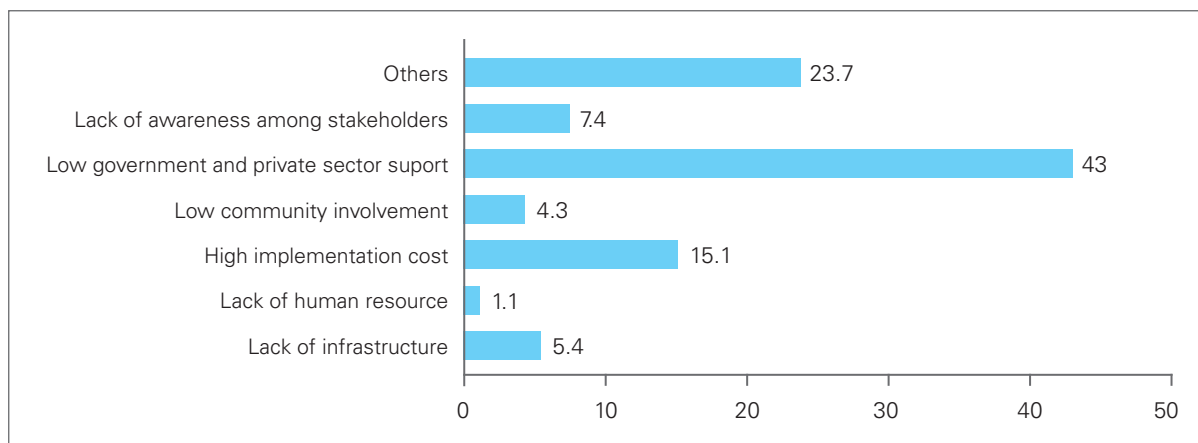
Figure 16: Types of food available from different food vendors around schools in Zanzibar



3.10.3 Challenges to the ready availability of food services in schools in Zanzibar

Figure 17 presents challenges to the effective provision of food services in Zanzibar schools.

Figure 17: Challenges to effective food services in Zanzibar schools

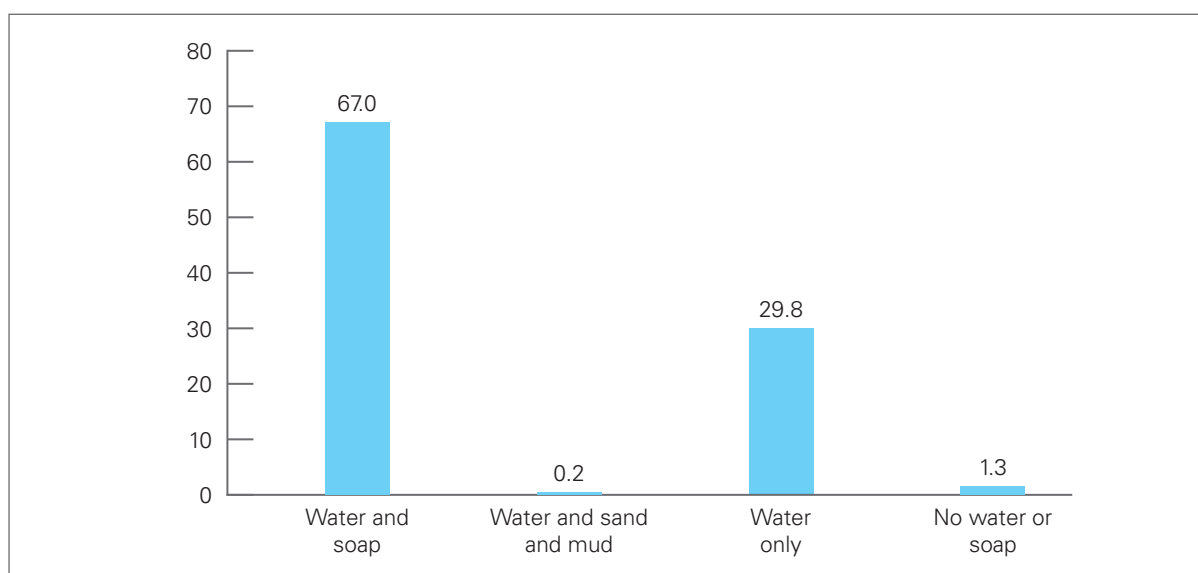


3.10.3 WASH practices

Hygiene situation and habits among the participants

Figure 18 further illustrates the proportion of the study participants observing different hand washing practices.

Figure 18: Percentage distribution of handwashing practices among participants





Sex and age

Hand washing practices after visiting the toilets was also observed in terms of age groups and sex. The results indicate that the behaviour of washing hands increased with increase in age.

Age

- About 70.9 per cent of the participants aged 15–19 years and 63.7 per cent of the respondents aged 10–14 years were more likely to wash their hands after visiting the toilets than 57.4 per cent of the participants aged 5–9 years.

Sex

- Boys (66.1 per cent) were more likely to wash their hands after visiting the toilets than girls (61.7 per cent).

Table 15 Handwashing practice after visiting toilets among the participants by demographic characteristics

	Washing hands practice after visiting toilet					
	Never		Rarely		Many times	
	Number	Per cent	Number	Per cent	Number	Per cent
Sex						
Boys	102	8.3	314	25.6	812	66.1
Girls	159	12.1	346	26.3	813	61.7
Age (in years)						
5–9	104	13.4	226	29.1	446	57.5
10–14	116	11	267	25.3	673	63.7
15–19	41	5.7	167	23.4	506	70.9

3.10.4 Washing hands before eating

Table 16 Handwashing practice before eating among the participants by demographic characteristics

	Never	Really	Sometimes	Many times	Most of the time
Sex					
Boys	0.3	0.6	9.1	16.5	73.4
Girls	0.2	1.4	13.6	29.6	55.1
Age (in years)					
5–9	0.3	1.7	15.5	24	58.6
10–14	0.2	0.8	12.3	22.3	64.5
15–19	0.3	0.8	5.7	24.1	69

