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Nigeria

Demographic and Health Survey 2018

Key Indicators Report

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Abuja, Nigeria

The DHS Program
ICF
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The 2018 Nigeria Demographic and Health Survey (2018 NDHS) was implemented by the National Population Commission (NPC) in collaboration with the National Malaria Elimination Programme (NMEP) of the Federal Ministry of Health, Nigeria. The funding for the 2018 NDHS was provided by the United States Agency for International Development (USAID), Global Fund, Bill and Melinda Gates Foundation (BMGF), the United Nations Population Fund (UNFPA), and World Health Organisation (WHO). ICF provided technical assistance through The DHS Program, a USAID-funded project that provides support and technical assistance in the implementation of population and health surveys in countries worldwide.

Additional information about the 2018 NDHS may be obtained from the headquarters of the National Population Commission (NPC), Plot 2031, Olusegun Obasanjo Way, Zone 7, Wuse, P.M.B. 0281, Abuja, Nigeria (telephone: 234-09-523-9173; fax: 243-09-523-1024; email: info@population.gov.ng; internet: www.population.gov.ng).

Information about The DHS Program may be obtained from ICF, 530 Gaither Road, Suite 500, Rockville, MD 20850, USA (telephone: +1-301-407-6500; fax: +1-301-407-6501; email: info@DHSprogram.com; internet: www.DHSprogram.com).

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ACRONYMS AND ABBREVIATIONS

ACT	artemisinin-based combination therapy
AIDS	acquired immune deficiency syndrome
ANC	antenatal care
ANDI	African Network for Drugs and Diagnostics Initiative
ARI	acute respiratory infection
ASFR	age-specific fertility rate
BCG	Bacille Calmette-Guérin
BMGF	Bill and Melinda Gates Foundation
CAPI	computer-assisted personal interviewing
CBR	crude birth rate
CPR	contraceptive prevalence rate
CSPro	Census and Survey Processing
DHS	Demographic and Health Survey
DPT	diphtheria, pertussis, and tetanus vaccine
EA	enumeration area
FMOH	Federal Ministry of Health
HepB	hepatitis B
Hib	<i>Haemophilus influenzae</i> type B
HIV	human immunodeficiency virus
HPLC	high-performance liquid chromatography
IFAIN	International Foundation Against Infectious Disease in Nigeria
IFSS	internet file streaming system
IPV	inactivated poliomyelitis vaccine
ITN	insecticide-treated net
IUD	intrauterine contraceptive device
IYCF	infant and young child feeding
LAM	lactational amenorrhoea method
LGA	local government area
LLIN	long-lasting insecticidal net
LUTH	Lagos University Teaching Hospital
NDHS	Nigeria Demographic and Health Survey
NHREC	National Health Research Ethics Committee of Nigeria
NMEP	National Malaria Elimination Programme
NN	neonatal mortality
NPC	National Population Commission
NPHC	Population and Housing Census of the Federal Republic of Nigeria
ORS	oral rehydration salts
PCV	pneumococcal conjugate vaccine
PNC	postnatal care

PNN	postneonatal mortality
PSU	primary sampling unit
RDT	rapid diagnostic test
SCD	sickle cell disease
SD	standard deviation
SDG	Sustainable Development Goal
SDM	standard days method
SP	sulfadoxine-pyrimethamine
STI	sexually transmitted infection
TFR	total fertility rate
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
WHO	World Health Organization

FOREWORD

The 2018 Nigeria Demographic and Health Survey (NDHS) is designed to provide data for monitoring the population and health situation in Nigeria. The 2018 NDHS is the sixth survey of its kind to be conducted in Nigeria since 1990. The objective of the survey is to provide reliable estimates of fertility levels and preferences, awareness and use of family planning methods, breastfeeding practices, nutritional status of mothers and young children, early childhood mortality and maternal mortality, maternal and child health, knowledge and behaviour regarding HIV/AIDS and other sexually transmitted infections (STIs), female genital cutting, fistula, and domestic violence. In addition, the 2018 NDHS provides estimates of anaemia prevalence among children age 6-59 months and adults as well as estimates of malaria prevalence among children age 6-59 months. It also provides estimates of sickle cell disease. These data are intended to be used by programme managers and policymakers to evaluate and improve existing programmes. This key indicators report presents prefatory findings of the survey. A detailed and comprehensive report is scheduled to be published in August 2019.

The 2018 NDHS sample was selected using a stratified, two-stage cluster design, and enumeration areas (EAs) were the sampling units for the first stage. The second stage was a complete listing of households carried out in each of the 1,400 selected EAs. A representative sample of approximately 42,000 households was selected for the survey. One-third of the households (14,000) were selected for malaria, anaemia, and genotype testing of children age 6-59 months. All women age 15-49 and men age 15-59 who were either permanent residents of the selected households or visitors who stayed in the household the night before the survey were eligible to be interviewed. With consent from parents or guardians, blood samples were collected in one-third of households for anaemia, malaria, and genotype testing in the field. Malaria slides were assessed through microscopy on thick blood smears in the laboratory for children age 6-59 months. Also, in the subsample of households selected for the men's survey, one eligible woman in each household was randomly selected for additional questions regarding domestic violence.

The 2018 NDHS is unique in a number of ways. For the first time in a Nigeria DHS, the 2018 survey was implemented using computer-assisted personal interviewing (CAPI), allowing more rapid provision of data than in previous surveys. As sickle cell anaemia has become a national health burden in Nigeria, sickle cell disease testing was included for the first time in the 2018 NDHS, thus serving as a basis for testing this deadly disease in subsequent DHS surveys globally. In addition, the sample size was larger than that in the five previous NDHS surveys, covering a total of 1,400 clusters across the country. Social and behaviour change communication questions on malaria, minimum dietary diversity among women, fistula, and disability were included as requested by various stakeholders.

I offer my candid appreciation to the Honourable Minister of Health Professor Isaac F. Adewole PAS, FSPSP DSc (Hons), who is also Chairman of the Survey Steering Committee, for his leadership and commitment to the success of the survey. The effort of the National Malaria Elimination Programme (NMEP) in providing support for the malaria component of the survey is recognized. I also thank members of the Survey Steering Committee for their commitment and dedication to the survey's successful implementation. In addition, I wish to thank the Board of the National Population Commission, the Director-General, the directors, and the general staff for their support and advocacy for the success of the project. The hard work and commitment of the survey technical team, led by Project Director Amaka Ezenwa and Project Coordinator Inuwa B. Jalingo, are highly appreciated. My appreciation also goes to the state coordinators, biomarker monitors, quality control officers, supervisors, data collectors, listers and mappers, and drivers for their commitment and hard work during the survey.

My special thanks go to the United States Agency for International Development (USAID/Nigeria), the Global Fund, the Bill and Melinda Gates Foundation (BMGF), the World Health Organization (WHO), and the United Nations Population Fund (UNFPA). My intense appreciation also goes to ICF for providing technical support throughout the implementation of the survey. In addition, I thank all of the laboratories that provided support during the survey, particularly the African Network for Drugs and Diagnostics

Initiative (ANDI), Department of Medical Microbiology and Pathology, College of Medicine, University of Lagos; the Institute of Tropical Disease Research and Prevention, University of Calabar, Cross River; and the International Foundation Against Infectious Diseases in Nigeria (IFAIN). The timely release of the survey funds by the accounting firm Deloitte and Touche is commendable.

Finally, but not least, our deep appreciation goes to the survey respondents, state governments, local government authorities, and traditional authorities for their contributions and support during the implementation of the survey.

Alhaji Hassan Bashir, CNA
(Tafidan Bauchi)
Acting Chairman
National Population Commission

1 INTRODUCTION

The 2018 Nigeria Demographic and Health Survey (NDHS) is the sixth Demographic and Health Survey (DHS) conducted in Nigeria, following those implemented in 1990, 1999, 2003, 2008, and 2013. The National Population Commission (NPC), in collaboration with the National Malaria Elimination Programme (NMEP) of the Federal Ministry of Health (FMOH), implemented the survey. Data collection took place from August 14, 2018, to December 29, 2018. Funding for the 2018 NDHS was provided by the United States Agency for International Development (USAID), the Global Fund, the Bill and Melinda Gates Foundation (BMGF), the United Nations Population Fund (UNFPA), and the World Health Organization (WHO). ICF provided technical assistance through The DHS Program, which assists countries in the collection of data to monitor and evaluate population, health, and nutrition programmes.

This key indicators report presents a first look at selected findings from the 2018 NDHS. A comprehensive analysis of the data will be presented in a final report in August 2019.

1.1 SURVEY OBJECTIVES

The primary objective of the 2018 NDHS is to provide up-to-date estimates of basic demographic and health indicators. Specifically, the 2018 NDHS collected information on fertility, awareness and use of family planning methods, breastfeeding practices, nutritional status of women and children, maternal and child health, adult and childhood mortality, women's empowerment, domestic violence, female genital cutting, prevalence of malaria, awareness and behaviour regarding HIV/AIDS and other sexually transmitted infections (STIs), disability, and other health-related issues such as smoking.

The information collected through the 2018 NDHS is intended to assist policymakers and programme managers in designing and evaluating programmes and strategies for improving the health of the country's population. The 2018 NDHS also provides indicators relevant to the Sustainable Development Goals (SDGs) for Nigeria.

2 SURVEY IMPLEMENTATION

2.1 SAMPLE DESIGN

The sampling frame used for the 2018 NDHS is the Population and Housing Census of the Federal Republic of Nigeria (NPHC), which was conducted in 2006 by the National Population Commission (NPC). Administratively, Nigeria is divided into states. Each state is subdivided into local government areas (LGAs), and each LGA is divided into localities. In addition to these administrative units, during the 2006 NPHC each locality was subdivided into convenient areas called census enumeration areas (EAs). The primary sampling unit (PSU), referred to as a cluster for the 2018 NDHS, is defined on the basis of EAs from the 2006 EA census frame. Although the 2006 NPHC did not provide the number of households and population for each EA, population estimates were published for more than 800 LGA units. A combination of information from cartographic material demarcating each EA and the LGA population estimates from the census were used to identify the list of EAs, estimate the number of households, and distinguish EAs as urban or rural for the survey sample frame. Before sample selection, all localities were classified separately into urban and rural areas based on predetermined minimum sizes of urban areas (cut points); consistent with the official definition in 2017, any locality with more than a minimum population size of 20,000 was classified as urban.

The sample for the 2018 NDHS was a stratified sample selected in two stages. Stratification was achieved by separating each of the 37 states into urban and rural areas. In total, 74 sampling strata were identified. Samples were selected independently in every stratum via a two-stage selection. Implicit stratifications were achieved at each of the lower administrative levels by sorting the sampling frame before sample selection according to administrative order and by using a probability proportional to size selection during the first sampling stage.

In the first stage, 1,400 EAs were selected with probability proportional to EA size. EA size was the number of households residing in the EA. A household listing operation was carried out in all selected EAs, and the resulting lists of households served as a sampling frame for the selection of households in the second stage. In the second stage's selection, a fixed number of 30 households was selected in every cluster through equal probability systematic sampling, resulting in a total sample size of approximately 42,000 households. The household listing was carried out using tablets, and random selection of households was carried out through computer programming. The survey interviewers interviewed only the pre-selected households. To prevent bias, no replacements and no changes of the pre-selected households were allowed in the implementing stages.

Due to the non-proportional allocation of the sample to the different states and the possible differences in response rates, sampling weights were calculated, added to the data file, and applied so that the results would be representative at the national level as well as the domain level. Because the 2018 NDHS sample was a two-stage stratified cluster sample selected from the sampling frame, sampling weights were calculated based on sampling probabilities separately for each sampling stage and for each cluster.

The 2018 NDHS included all women age 15-49 in the sample households. Those who were either permanent residents of the selected households or visitors who stayed in the households the night before the survey were eligible to be interviewed. The men's survey was conducted in one-third of the sample households, and all men age 15-59 in these households were included. In this subsample, one eligible woman in each household was randomly selected to be asked additional questions about domestic violence. Similarly, biomarker information was collected only in those households selected for the men's survey. The biomarkers included in this survey were height and weight for women age 15-49 and children age 0-59 months, haemoglobin testing for women age 15-49 and children age 6-59 months, and testing for malaria and sickle cell disease among children age 6-59 months. The disability module, female genital cutting module, and fistula module were implemented in the two-thirds of the households that were not selected for the men's survey.

The survey was successfully carried out in 1,389 clusters after 11 clusters with deteriorating law-and-order situations during fieldwork were dropped. These areas were in Zamfara (4 clusters), Lagos (1 cluster), Katsina (2 clusters), Sokoto (3 clusters), and Borno (1 cluster).

2.2 QUESTIONNAIRES

Five questionnaires were used for the 2018 NDHS: the Household Questionnaire, the Woman's Questionnaire, the Man's Questionnaire, the Biomarker Questionnaire, and the Fieldworker Questionnaire. The questionnaires, based on The DHS Program's standard Demographic and Health Survey (DHS-7) questionnaires, were adapted to reflect the population and health issues relevant to Nigeria. Comments were solicited from various stakeholders representing government ministries and agencies, nongovernmental organisations, and international donors. The survey protocol was reviewed and approved by the National Health Research Ethics Committee of Nigeria (NHREC) and the ICF Institutional Review Board. After all questionnaires were finalised in English, they were translated into Hausa, Yoruba, and Igbo. The 2018 NDHS used computer-assisted personal interviewing (CAPI) for data collection.

The Household Questionnaire listed all members of and visitors to selected households. Basic demographic information was collected on each person listed, including age, sex, marital status, education, and relationship to the head of the household. For children under age 18, survival status of parents was determined. Data on age, sex, and marital status of household members were used to identify women and men who were eligible for individual interviews. The Household Questionnaire also collected information on characteristics of the household's dwelling unit, such as source of drinking water; type of toilet facilities; materials used for flooring, external walls, and roofing; ownership of various durable goods; and ownership of mosquito nets. In addition, data were gathered on salt testing and disability.

The Woman's Questionnaire was used to collect information from all eligible women age 15-49. These women were asked questions on the following topics:

- Background characteristics (including age, education, and media exposure)
- Birth history and child mortality
- Knowledge, use, and source of family planning methods
- Antenatal, delivery, and postnatal care
- Vaccinations and childhood illnesses
- Breastfeeding and infant feeding practices
- Women's minimum dietary diversity
- Marriage and sexual activity
- Fertility preferences (including desire for more children and ideal number of children)
- Women's work and husbands' background characteristics
- Knowledge, awareness, and behaviour regarding HIV/AIDS and other sexually transmitted infections (STIs)
- Knowledge, attitudes, and behaviour related to other health issues (e.g., smoking)
- Female genital cutting
- Fistula
- Adult and maternal mortality
- Domestic violence

The Man's Questionnaire was administered to all men age 15-59 in the subsample of households selected for the men's survey. The Man's Questionnaire collected much of the same information as the Woman's Questionnaire but was shorter because it did not contain a detailed reproductive history or questions on maternal and child health.

The Biomarker Questionnaire was used to record the results of anthropometry measurements and other biomarkers for women and children. This questionnaire was administered only to a subsample selected for the men's survey. All children age 0-59 months and all women age 15-49 were eligible for height and

weight measurements. Women age 15-49 were also eligible for haemoglobin testing. Children age 6-59 months were also eligible for haemoglobin testing, malaria testing, and genotype testing for sickle cell disease.

The Fieldworker Questionnaire recorded background information from the interviewers that will serve as a tool in conducting analyses of data quality. Each interviewer completed the self-administered Fieldworker Questionnaire after the final selection of interviewers and before the fieldworkers entered the field. No personal identifiers were attached to the 2018 NDHS fieldworkers' data file.

The enumerators used tablet computers for data collection. The tablet computers were equipped with Bluetooth® technology to enable remote electronic transfer of files, such as assignments from the team supervisor to the interviewers, individual questionnaires to survey team members, and completed questionnaires from interviewers to team supervisors. The computer-assisted personal interviewing (CAPI) data collection system employed in the 2018 NDHS was developed by The DHS Program with the mobile version of CSPro. The CSPro software was developed jointly by the U.S. Census Bureau, Serpro S.A., and The DHS Program.

2.3 ANTHROPOMETRY, ANAEMIA TESTING, MALARIA TESTING, AND GENOTYPE TESTING FOR SICKLE CELL DISEASE

The 2018 NDHS incorporated four biomarkers: anthropometry, anaemia testing, malaria testing, and genotype testing for sickle cell anaemia. Biomarkers were collected in the one-third of households selected for the male survey. Blood specimens for the tests were collected from eligible women who voluntarily consented to be tested and from all children age 6-59 months for whom consent was obtained from their parents or the adult responsible for the children. In contrast with the data collection procedure for the household and individual interviews, data related to biomarkers were initially recorded on a paper Biomarker Questionnaire and subsequently entered into interviewers' tablet computers. As part of quality assurance, a Biomarker Checklist was used to verify that proper procedures were used during collection of biomarker data and to enhance supportive supervision. The survey protocol, including biomarker collection, was reviewed and approved by the National Health Research Ethics Committee of Nigeria (NHREC) and the ICF Institutional Review Board.

Anthropometry: Height and weight measurements were recorded for children age 0-59 months and women age 15-49. The 2018 NDHS included quality assurance procedures to improve anthropometry data quality. These procedures, undertaken in real time during data collection, included re-measurement of all children with data outside of pre-specified flagged values on a subsequent day and re-measurement of the height and weight of a random selection of children (10%) on a subsequent day.

Anaemia testing: Blood samples for anaemia testing were obtained from a drop of blood taken from a finger prick (or a heel prick for children age 6-11 months). A drop of blood from the prick site was drawn into a microcuvette, and a haemoglobin analysis was carried out on-site with a battery-operated portable HemoCue analyser. Results were provided verbally and in writing. Parents of children with a haemoglobin level below 8 g/dl were instructed to take the child to a health facility for follow-up care. Likewise, nonpregnant women and pregnant women were referred for follow-up care if their haemoglobin levels were below 8 g/dl and 7 g/dl, respectively. All households in which anaemia testing was conducted were given a brochure that explained the causes and prevention of anaemia.

Malaria testing: Malaria testing was carried out among children age 6-59 months. With the same finger (or heel) prick used for anaemia testing, a drop of blood was tested immediately using the SD Bioline Ag P.f. (HRP-II)TM rapid diagnostic test (RDT), which is a qualitative test for the detection of histidine-rich protein II (HRP-II) antigen of *Plasmodium falciparum* in human whole blood. *Plasmodium falciparum* (Pf) is the predominant *Plasmodium* species found in Nigeria. A tiny volume of blood is captured with a disposable sample applicator and placed in the well of the testing device. All health technicians were trained to perform RDTs in the field according to the manufacturers' instructions. Technicians read,

interpreted, and recorded the RDT results after 15 minutes following the instructions in the kit insert. The RDT results were recorded as Pf positive or negative, with faint test lines being considered positive. As with anaemia testing, malaria RDT results were provided to the child's parent or guardian in oral and written form and were recorded on the Biomarker Questionnaire. Children who tested positive for malaria by RDT were offered a full course of treatment according to the standard procedures for treating malaria in Nigeria if they did not have a severe case of malaria (diagnosed by symptoms or the presence of severe anaemia), were not currently on treatment, and had not completed a full course of artemisinin-based combination therapy (ACT) during the preceding 2 weeks. Nurses on each field team were instructed to ask about signs of severe malaria and about any medications the child might be taking. The nurses then provided the age-appropriate dose of ACT and instructions for administering the medicine to the child.^{1,2} The anaemia brochure also contained information on malaria and was given to all households in which malaria testing was conducted.

Microscopy on thick blood smears: In addition to the SD Bioline Ag P.f. rapid test, a thick smear was prepared on a slide for 75% of the households where malaria RDTs were performed. These blood smears were dried and packed carefully in the field, assigned barcode labels corresponding to the Biomarker Questionnaire, and then transported to the state-level laboratory, where they were stained. There were 18 designated staining sites in the states, one site for each two states. The stained slides were then transferred to the Primary Testing Laboratory (ANDI Centre of Excellence for Malaria Diagnosis, Lagos University Teaching Hospital). Microscopy to determine malaria infection was carried out in this laboratory. External quality control was conducted on a selected proportion of the slides in the Secondary Testing Laboratory at the University of Calabar Teaching Hospital.

Genotype testing for sickle cell disease: Sickle cell disease (SCD) is a common and life-threatening haematological disorder. Given that sickle cell anaemia is a public health concern in Nigeria, it was thought vital to include this disease in the survey as there is no reliable information at the national level. Blood collection for genotype testing was carried out among children age 6-59 months. With the same finger (or heel) prick used for anaemia and malaria testing, a drop of blood was tested immediately using the SickleSCAN® rapid diagnostic test kit. A tiny portion of blood was captured on the capillary sampler, dispensed into the PreTreatment Module, and mixed to allow complete treatment of the specimen with buffer. The specimen was then dispensed into the SickleSCAN cartridge. Results were available in 5 minutes. The results were provided to the respondent or the child's parent/guardian through the pamphlet and also recorded on the Biomarker Questionnaire. Parents or guardians whose children have sickle cell disease were urged to take the child to a health facility for follow-up care.

In 25% of the households where genotype testing was done, a confirmatory test for the SickleSCAN RDT was done. Using the same finger (or heel) prick used for the above tests, a drop of blood was collected on the filter paper card to form a dry blood spot to which a barcode label unique to the child was affixed. A duplicate label was attached to the Biomarker Data Collection Form. A third copy of the same barcode was affixed to the Dried Blood Spot Transmittal Sheet to track the blood samples from the field to the laboratory. The samples were then transported to the standard laboratory for high-performance liquid chromatography (HPLC) confirmatory testing at the International Foundation Against Infectious Disease in Nigeria (IFAIN) in Abuja. Upon arrival at the laboratory, each blood sample was logged into the CSPro Genotype Test Tracking System database, given a laboratory number, and stored at -20°C or lower until tested. Test results for the 2018 NDHS were entered into a spreadsheet with a barcode as the unique identifier for each result.

¹ Dosage of ACT was based on the age of the recipient. The proper dosage for a child age 6 months to 3 years is one tablet of artemether-lumefantrine (co-formulated tablets containing 20 mg artemether and 120 mg lumefantrine) to be taken twice daily for 3 days, while the dosage for a child age 4-8 is two tablets of artemether-lumefantrine to be taken twice daily for 3 days.

² Children who exhibited signs of severe malaria (based on symptoms or laboratory confirmation of severe anaemia) were referred to the nearest facility for treatment.

2.4 PRETEST

The pretest training was designed to train the trainers for the main training as well as to ensure that they were well versed with the NDHS questionnaires and procedures and able to test the questionnaires in the different languages. The training involved sessions of administering the NDHS questionnaires and a separate session for biomarker data collection. Forty-five participants, comprising 5 zonal and 20 state NPC coordinators, 5 NMEP coordinators, 2 senior lab scientists from the Lagos University Teaching Hospital (LUTH), 4 lab scientists, 4 nurses, 2 enumerators, and 3 data processing staff members, participated in the pretest training and fieldwork. The pretest took place over a 3-week period from April 30 to May 20, 2018. Most of the participants had previous experience carrying out NDHS surveys or the Nigeria Malaria Indicator Survey (NMIS). The idea behind having the data processing staff participate in the pretest was to familiarise them with the CAPI system.

The training was conducted by ICF staff who focused on the technical components of the survey, biomarkers, and the CAPI data collection system. The training focused on key components of the survey, interview techniques and procedures for completing the NDHS questionnaires, and administration of interviews using the CAPI system. The biomarker training included orientation on collecting height and weight data; testing for anaemia and malaria and genotype testing for sickle cell disease; and standardisation procedures for anthropometry. The participants worked in groups using various training techniques, including interactive question-and-answer sessions, case studies, and role-plays. Before starting the fieldwork, the participants were given ample opportunities to practice the questionnaires and to practice collection of biomarkers among women and children. The participants administered the questionnaires in the field, provided feedback on the content and language of the questionnaires, tested the CAPI software programme, commented on the biomarker procedure, and learned various training techniques.

The fieldwork for the pretest was carried out in communities that spoke English, Hausa, Yoruba, and Igbo. Each team carried out the pretest in an urban and a rural location, completing eight clusters in total. Following the fieldwork, a debriefing session was held with the pretest field staff, and modifications to the questionnaires were made based on lessons drawn from the exercise.

2.5 TRAINING OF FIELD STAFF

Prior to the main training, biomarker training was held for the laboratory scientists and nurses from June 25 to July 6, 2018. The training was facilitated by the ICF team and supported by the trainers who were trained during the pretest. A total of 37 nurses and 37 laboratory scientists were trained on biomarker data collection and recording. This included training on anthropometry; using rapid test kits to test for anaemia, malaria, and sickle cell disease; preparing slides for malaria parasitemia; and preparing dried blood spots for confirmatory test of sickle cell diagnostics.

The training utilised a variety of different learning tools. Plenary lectures were held on the technical aspects of biomarker collection, and other tools included video and hands-on demonstrations on the process of biomarker collection, instructions on how to fill out the questionnaire and transmittal sheets, and instructions on data quality procedures. In addition, break-out sessions were held daily at which trainees had the opportunity for hands-on practice with both adults and children. A total of four anthropometry standardisation exercises with 40 children and two re-standardisation exercises were undertaken. Following the standardisation exercise, the results of the exercise were presented. General observations on accuracy (difference between the reference value and the participant's value) and precision (difference between the first and second readings) were discussed.

The field coordinators were trained on the use of the Biomarker Checklist. Also implemented were random re-measurements for quality assurance and re-visitation of households for re-measurements for flagged cases involving children whose z-score values were less than -3 or greater than 3. A two-day field practice

was conducted. The nurses and laboratory scientists later joined the main team for refresher training before moving on to data collection.

The main training for the 2018 NDHS started on July 16, 2018, and lasted until August 13, 2018. The training included 4 weeks of orientation on data collection instruments and procedures followed by field practice. The 358 participants for the main training were selected through a strict vetting process at the state level. Applicants took a written test and a computerised test and also completed a personal interview to qualify for participation in the main training. Attendees came from different parts of Nigeria and represented major language groups within the country. Most of the candidates had previous fieldwork experience, and some had experience gained through previous rounds of the Nigeria DHS and Malaria Indicator Survey.

Twenty-eight state coordinators from the NPC and five coordinators from the NMEP who had participated in the pretest training and training of trainers facilitated the training. ICF staff provided technical support during the training sessions. The participants were divided into six classrooms of about 45 participants with at least three facilitators in each room. The training sessions included discussion of concepts, procedures, and methodologies for conducting the DHS survey. Participants were guided through the questionnaires using various training techniques such as role-plays, age probing in pairs, group discussion, in-class exercises, case studies, and presentations. The training also included discussions of the CAPI system, demonstrations of the CAPI DHS menus, and conducting of interviews through the CAPI system.

Participants were evaluated through in-class exercises, quizzes, and observations made during field practice. Ultimately, 37 supervisors and 37 field editors were identified based on their performance. Similarly, 74 male interviewers and 111 female interviewers were selected to serve as enumerators, while the rest were kept as reserves. Thirty-seven laboratory scientists and 37 nurses were also selected to participate in the survey.

The team supervisors received additional training on providing logistical support, managing the field teams, observing interviews, keeping an inventory of supplies, and collecting biomarker data. They were also trained on implementing the Biomarker Checklist to carry out data quality assurance.

The field editors received additional training in performing supervisory activities with the CAPI system, data quality control procedures, fieldwork coordination, and management. The field editors were trained on assigning households and receiving completed interviews from the interviewers; recognising and dealing with error messages; receiving system updates and distributing updates to interviewers; entering biomarker questionnaires; re-measurement and revisit questionnaires and the Biomarker Checklist; resolving duplicated cases; and closing clusters. They were also trained on transferring interviews to the central office via the secure internet file streaming system (IFSS) developed by The DHS Program.

Six quality controllers for biomarker data collection were identified from among the trainees who underwent training during biomarker training, pretest training, and the main training, and they received additional training on supporting the teams and monitoring fieldwork through the Biomarker Checklist.

2.6 FIELDWORK

The fieldwork for the 2018 NDHS was launched under close supervision on August 14, 2018, in the clusters in the six zonal headquarters. Thirty-seven teams consisting of one supervisor, one field editor, two male interviewers, three female interviewers, one lab scientist, and one nurse were assigned across the different clusters in the zones. The teams were closely monitored by the state coordinators and the quality controllers. After completion of the fieldwork in the zonal headquarters in the first week, teams were brought back to the zonal office for a review session where the teams had an opportunity to clarify any questions they had. The teams were then dispatched to their respective states. Data collection lasted until December 29, 2018. The fieldwork in some states took longer than expected due to the security situation.

Fieldwork monitoring was an integral part of the 2018 NDHS, and several rounds of monitoring were carried out by the NDHS core team, the state coordinators from the NPC and NMEP, and ICF staff. The monitors were provided with guidelines for overseeing the fieldwork. Weekly field check tables were generated from the completed interviews sent to the central office to monitor fieldwork progress, and regular feedback was sent out to the teams.

2.7 DATA PROCESSING

The processing of the 2018 NDHS data began almost as soon as the fieldwork started. As data collection was completed in each cluster, all electronic data files were transferred via the IFSS to the NPC central office in Abuja. These data files were registered and checked for inconsistencies, incompleteness, and outliers. The field teams were alerted to any inconsistencies and errors. Secondary editing, carried out in the central office, involved resolving inconsistencies and coding the open-ended questions. The NPC data processor coordinated the exercise at the central office. The biomarker paper questionnaires were compared with electronic data files to check for any inconsistencies in data entry. Data entry and editing were carried out using the CSPro software package. The concurrent processing of the data offered a distinct advantage because it maximised the likelihood of the data being error-free and accurate. Timely generation of field check tables allowed for effective monitoring. The secondary editing of the data was completed in the second week of April 2019.

Throughout this report, numbers in the tables reflect weighted numbers. Percentages based on 25 to 49 unweighted cases are shown in parentheses, and percentages based on fewer than 25 unweighted cases are suppressed and replaced with an asterisk, to caution readers when interpreting data that a percentage based on fewer than 50 cases may not be statistically reliable.

3 KEY FINDINGS

3.1 RESPONSE RATES

Table 1 shows response rates for the 2018 NDHS. A total of 41,668 households were selected for the sample, of which 40,666 were occupied. Of the occupied households, 40,427 were successfully interviewed, yielding a response rate of 99%. In the interviewed households, 42,121 women age 15-49 were identified for individual interviews; interviews were completed with 41,821 women, yielding a response rate of 99%. In the subsample of households selected for the male survey, 13,422 men age 15-59 were identified and 13,311 were successfully interviewed, yielding a response rate of 99%.

Table 1 Results of the household and individual interviews			
Number of households, number of interviews, and response rates, according to residence (unweighted), Nigeria DHS 2018			
Result	Residence		Total
	Urban	Rural	
Household interviews			
Households selected	17,282	24,386	41,668
Households occupied	16,906	23,760	40,666
Households interviewed	16,780	23,647	40,427
Household response rate ¹	99.3	99.5	99.4
Interviews with women age 15-49			
Number of eligible women	17,127	24,994	42,121
Number of eligible women interviewed	16,984	24,837	41,821
Eligible women response rate ²	99.2	99.4	99.3
Household interviews in subsample			
Households selected	5,762	8,131	13,893
Households occupied	5,657	7,946	13,603
Households interviewed	5,614	7,900	13,514
Household response rate in subsample ¹	99.2	99.4	99.3
Interviews with men age 15-59			
Number of eligible men	5,547	7,875	13,422
Number of eligible men interviewed	5,506	7,805	13,311
Eligible men response rate ²	99.3	99.1	99.2

¹ Households interviewed/households occupied
² Respondents interviewed/eligible respondents

3.2 CHARACTERISTICS OF RESPONDENTS

Table 2 shows, by background characteristics, the weighted and unweighted numbers and the weighted percent distributions of women and men age 15-49 interviewed in the 2018 NDHS. More than half of the women (54%) and 46% of men in the sample are under age 30.

Fifty-four percent of women and men are Muslims, while 46 percent of women and men are Christians. Hausa is the predominant ethnic group (30% of women and 31% of men). Fifteen percent of women and men belong to the Igbo ethnic group, while 15% of women and 16% of men belong to the Yoruba group.

Table 2 Background characteristics of respondents

Percent distribution of women and men age 15-49 by selected background characteristics, Nigeria DHS 2018

Background characteristic	Women			Men		
	Weighted percent	Weighted number	Unweighted number	Weighted percent	Weighted number	Unweighted number
Age						
15-19	20.2	8,448	8,423	20.4	2,415	2,474
20-24	16.3	6,835	6,844	12.4	1,472	1,545
25-29	17.3	7,255	7,203	13.5	1,599	1,618
30-34	14.8	6,178	5,997	15.1	1,792	1,751
35-39	13.1	5,463	5,406	15.4	1,832	1,774
40-44	9.4	3,940	4,057	13.2	1,569	1,514
45-49	8.9	3,701	3,891	10.0	1,188	1,169
Religion						
Catholic	10.4	4,345	4,436	11.3	1,339	1,384
Other Christian	35.6	14,872	16,070	34.5	4,092	4,409
Islam	53.5	22,372	20,959	53.5	6,351	5,962
Traditionalist	0.3	145	156	0.6	74	76
Other	0.2	87	200	0.1	11	14
Ethnic group						
Ekoi	0.6	249	275	0.0	2	1
Fulani	6.2	2,585	2,953	5.3	630	721
Hausa	29.8	12,445	10,765	31.1	3,687	3,200
Ibibio	1.8	760	801	1.8	217	226
Igala	0.8	346	457	1.1	125	151
Igbo	15.4	6,420	6,714	14.9	1,764	1,843
Ijaw/Izon	1.9	801	1,201	1.6	189	308
Kanuri/Berberi	2.4	1,008	873	2.5	301	262
Tiv	2.5	1,037	976	2.2	258	227
Yoruba	15.3	6,418	5,372	15.9	1,892	1,601
Other	23.3	9,729	11,404	23.6	2,797	3,299
Marital status						
Never married	25.2	10,550	10,669	41.7	4,951	5,090
Married	67.2	28,121	27,841	54.5	6,470	6,380
Living together	2.3	968	1,047	2.7	316	231
Divorced/separated	2.7	1,123	1,147	0.9	103	113
Widowed	2.5	1,058	1,117	0.2	28	31
Residence						
Urban	45.8	19,163	16,984	46.4	5,512	4,900
Rural	54.2	22,658	24,837	53.6	6,356	6,945
Zone						
North Central	14.1	5,891	7,772	14.4	1,704	2,186
North East	15.9	6,636	7,639	16.3	1,936	2,196
North West	29.2	12,225	10,129	26.9	3,195	2,622
South East	11.9	4,963	5,571	11.4	1,355	1,509
South South	11.6	4,840	5,080	12.1	1,438	1,520
South West	17.4	7,266	5,630	18.9	2,240	1,812
State						
North Central						
FCT-Abuja	0.8	319	1,186	0.8	96	353
Benue	3.2	1,354	1,278	3.0	351	321
Kogi	1.6	654	907	1.3	156	191
Kwara	1.6	684	906	1.8	208	259
Nasarawa	1.5	648	1,121	1.7	206	345
Niger	3.2	1,357	1,292	3.7	442	420
Plateau	2.1	875	1,082	2.1	246	297
North East						
Adamawa	2.2	903	1,083	1.8	218	244
Bauchi	3.2	1,343	1,329	3.5	420	419
Borno	3.5	1,469	1,269	3.4	398	339
Gombe	1.7	717	1,356	2.0	240	462
Taraba	2.1	877	1,284	1.6	187	268
Yobe	3.2	1,327	1,318	4.0	472	464
North West						
Jigawa	3.3	1,382	1,405	2.5	291	296
Kaduna	6.0	2,493	1,610	5.4	636	426
Kano	6.4	2,692	1,983	5.7	676	483
Katsina	5.5	2,283	1,494	5.8	687	454
Kebbi	2.7	1,136	1,335	2.5	291	342
Sokoto	2.2	910	1,065	1.8	218	258
Zamfara	3.2	1,328	1,237	3.3	396	363

Continued...

Table 2—Continued

Background characteristic	Women			Men		
	Weighted percent	Weighted number	Unweighted number	Weighted percent	Weighted number	Unweighted number
State (continued)						
South East						
Abia	1.5	630	982	1.6	185	274
Anambara	3.5	1,477	1,244	3.4	409	342
Ebonyi	2.5	1,027	1,310	2.0	233	297
Enugu	2.1	880	1,038	1.6	192	224
Imo	2.3	948	997	2.8	337	372
South South						
Akwa Ibom	2.3	948	958	2.5	291	289
Bayelsa	0.7	298	771	0.9	109	273
Cross River	1.4	574	748	1.2	137	182
Delta	2.2	931	815	2.7	326	280
Edo	1.3	555	658	1.2	140	167
Rivers	3.7	1,534	1,130	3.7	435	329
South West						
Ekiti	1.1	475	774	1.2	139	226
Lagos	6.9	2,891	1,445	7.1	845	471
Ogun	2.2	927	798	2.6	309	261
Ondo	1.6	683	863	2.1	247	320
Osun	2.2	938	832	2.3	269	242
Oyo	3.2	1,352	918	3.6	432	292
Education						
No education	34.9	14,603	14,398	21.5	2,555	2,496
Primary	14.4	6,039	6,383	13.4	1,590	1,574
Secondary	39.7	16,583	16,698	48.0	5,697	5,797
More than secondary	11.0	4,596	4,342	17.1	2,025	1,978
Wealth quintile						
Lowest	17.3	7,222	7,747	16.8	1,991	2,133
Second	19.2	8,045	8,346	17.9	2,123	2,167
Middle	19.6	8,207	8,859	20.2	2,393	2,553
Fourth	21.5	8,990	8,840	21.8	2,590	2,587
Highest	22.4	9,357	8,029	23.3	2,770	2,405
Total 15-49	100.0	41,821	41,821	100.0	11,868	11,845
50-59	na	na	na	na	1,443	1,466
Total 15-59	na	na	na	na	13,311	13,311

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.
na = Not applicable

The majority of respondents are currently married or living together with a partner (70% of women and 57% of men). The proportion of men who have never been married is higher than the proportion of never-married women (42% versus 25%). Three percent of women are widowed, and 3% are divorced or separated. The proportion of widowed, divorced, or separated men is distinctly less than the proportion among women.

Over half of women and men live in rural areas (54%), and almost 3 in 10 live in the North West zone of the country. Seventeen percent of women and 19% of men live in the South West zone, while 16% of women and men live in the North East zone and 14% live in the North Central zone.

Half of the women in Nigeria have a secondary education or higher, as compared with 65% of men. Thirty-five percent of women and 22% of men have no education.

3.3 FERTILITY

To generate data on fertility, all women who were interviewed were asked to report the total number of sons and daughters to whom they had ever given birth. To ensure that all information was reported, women were asked separately about children still living at home, those living elsewhere, and those who had died. A complete birth history was then obtained, including information on the sex, date of birth, and survival status of each child; age at death for children who had died was also recorded.

Table 3 shows age-specific fertility rates (ASFRs) among women by 5-year age groups for the 3-year period preceding the survey. Age-specific and total fertility rates were calculated directly from the birth history data, taking into account live births.³ The sum of age-specific fertility rates (known as the total fertility rate, or TFR) is a summary measure of the level of fertility. It can be interpreted as the number of children a woman would have by the end of her childbearing years if she were to pass through those years bearing children at the currently observed age-specific rates. If fertility were to remain constant at current levels, a woman in Nigeria would bear an average of 5.3 children in her lifetime. Fertility is low among adolescents (107 births per 1,000 women), peaks at 256 births per 1,000 among women age 25-59, and then decreases thereafter.

Table 3 Current fertility

Age-specific and total fertility rates, general fertility rate, and the crude birth rate for the 3 years preceding the survey, according to residence, Nigeria DHS 2018

Age group	Residence		
	Urban	Rural	Total
10-14	[0]	[3]	[2]
15-19	58	144	107
20-24	199	269	239
25-29	236	273	256
30-34	195	239	217
35-39	136	161	149
40-44	57	75	67
45-49	18	26	23
TFR (15-49)	4.5	5.9	5.3
GFR	154	206	182
CBR	34	42	38

Note: Age-specific fertility rates are per 1,000 women. Estimates in brackets are truncated. Rates are for the period 1-36 months preceding the interview. Rates for the 10-14 age group are based on retrospective data from women age 15-17.

TFR: Total fertility rate, expressed per woman

GFR: General fertility rate, expressed per 1,000 women age 15-44

CBR: Crude birth rate, expressed per 1,000 population

Fertility is higher among rural women than among urban women; on average, rural women will give birth to about 1.4 children more than urban women during their reproductive years (5.9 and 4.5, respectively).

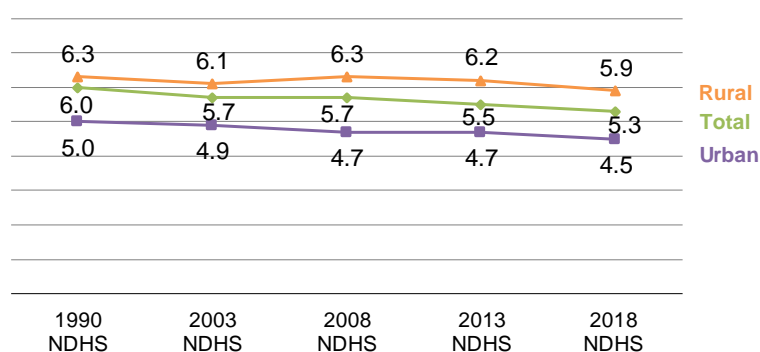
There has been a gradual decline in fertility rates in the last decade, from 5.7 births per woman in the 2008 NDHS to 5.5 births per woman in the 2013 NDHS and 5.3 births per woman in the 2018 NDHS (Figure 1).

3.4 TEENAGE PREGNANCY AND MOTHERHOOD

The issue of adolescent fertility is important for both health and social reasons. Children born to very young mothers are at increased risk of sickness and death. Teenage mothers are more likely to experience adverse pregnancy outcomes and to

Figure 1 Trends in fertility by residence

Total fertility rate for the 3 years before each survey



³ Numerators for the age-specific rates are calculated by summing the births that occurred during the 1-36 months preceding the survey, classified by the 5-year age group of the mother at the time of the birth. The denominators are the numbers of woman-years lived in each 5-year age group during the 1-36 months preceding the survey.

be constrained in their ability to pursue educational opportunities than young women who delay childbearing.

Table 4 shows the percentage of women age 15-19 who had given birth or were pregnant with their first child at the time of the survey, according to background characteristics. Overall, 19% of women age 15-19 had begun childbearing: 14% had had a live birth and 4% were pregnant at the time of the interview. The proportion of teenagers who had begun childbearing rises rapidly with age, from 2% at age 15 to 37% at age 19. Rural teenagers tend to start childbearing earlier than urban teenagers (27% versus 8%).

Table 4 Teenage pregnancy and motherhood				
Percentage of women age 15-19 who have had a live birth or who are pregnant with their first child, and percentage who have begun childbearing, according to background characteristics, Nigeria DHS 2018				
Background characteristic	Percentage of women age 15-19 who:		Percentage who have begun childbearing	Number of women
	Have had a live birth	Are pregnant with first child		
Age				
15	0.8	1.5	2.4	2,078
16	4.5	3.9	8.4	1,585
17	16.6	4.7	21.3	1,579
18	24.4	6.1	30.6	1,921
19	30.9	6.1	37.0	1,286
Residence				
Urban	6.5	1.9	8.4	3,813
Rural	20.9	6.3	27.2	4,635
Zone				
North Central	12.1	4.2	16.3	1,183
North East	19.6	4.9	24.5	1,497
North West	21.3	7.2	28.5	2,737
South East	7.5	1.3	8.8	928
South South	8.6	1.9	10.6	888
South West	4.2	1.3	5.5	1,215
State				
North Central				
FCT-Abuja	8.9	1.7	10.6	63
Benue	13.2	4.7	17.9	279
Kogi	17.0	3.4	20.4	148
Kwara	8.6	2.1	10.7	141
Nasarawa	7.8	2.3	10.1	128
Niger	18.0	8.0	26.1	242
Plateau	5.4	2.8	8.2	180
North East				
Adamawa	20.5	3.4	23.9	183
Bauchi	32.3	8.3	40.7	307
Borno	10.0	3.5	13.5	357
Gombe	19.8	3.2	23.0	142
Taraba	19.4	5.3	24.7	189
Yobe	17.6	4.6	22.2	320
North West				
Jigawa	19.2	7.8	26.9	293
Kaduna	25.8	5.5	31.3	522
Kano	20.8	6.2	27.0	607
Katsina	21.0	6.3	27.3	585
Kebbi	18.5	8.6	27.2	219
Sokoto	19.6	12.5	32.1	188
Zamfara	20.7	8.7	29.4	322
South East				
Abia	10.1	0.8	10.9	112
Anambara	10.9	1.3	12.2	249
Ebonyi	6.9	1.4	8.2	223
Enugu	5.6	1.5	7.0	166
Imo	3.5	1.5	5.0	177
South South				
Akwa Ibom	10.7	2.1	12.8	178
Bayelsa	19.0	0.9	19.9	51
Cross River	11.5	2.5	14.0	102
Delta	5.9	4.0	9.9	184
Edo	6.5	2.1	8.7	112
Rivers	7.0	0.3	7.3	262

Continued...

Table 2—Continued

Background characteristic	Percentage of women age 15-19 who:		Percentage who have begun childbearing	Number of women
	Have had a live birth	Are pregnant with first child		
South West				
Ekiti	14.2	1.3	15.5	83
Lagos	1.1	0.0	1.1	544
Ogun	4.4	3.4	7.8	118
Ondo	7.8	1.3	9.1	129
Osun	5.6	2.1	7.7	172
Oyo	4.9	3.3	8.2	168
Education				
No education	33.8	9.9	43.7	2,182
Primary	17.8	5.4	23.2	881
Secondary	6.2	2.0	8.2	5,162
More than secondary	0.4	0.4	0.8	224
Wealth quintile				
Lowest	25.9	6.2	32.0	1,427
Second	22.5	8.5	31.0	1,740
Middle	15.2	4.2	19.4	1,758
Fourth	8.1	2.2	10.3	1,810
Highest	2.4	1.0	3.4	1,713
Total	14.4	4.3	18.7	8,448

While 29% of teenagers in the North West had begun childbearing, only 6% in the South West and 9% in the South East had begun to do so. Bauchi has the highest proportion of teenagers who have begun childbearing, while Lagos has the lowest proportion (41% versus 1%). Teenagers with more than a secondary education and those in the highest wealth quintile tend to start childbearing later than those with no education and those in the lowest quintiles.

3.5 FERTILITY PREFERENCES

Information on fertility preferences is used to assess the potential demand for family planning services for the purposes of spacing or limiting future childbearing. To elicit information on fertility preferences, several questions were asked of currently married women (pregnant or not) regarding whether they wanted to have another child and, if so, how soon.

Table 5 shows that 34% of women want to have another child soon (within the next 2 years), and 30% want to have another child later (in 2 or more years). Twenty-four percent of women want no more children or have already been sterilised. Six percent have not decided if they want another child.

Table 5 Fertility preferences by number of living children

Percent distribution of currently married women age 15-49 by desire for children, according to number of living children, Nigeria DHS 2018

Desire for children	Number of living children ¹							Total
	0	1	2	3	4	5	6+	
Have another soon ²	87.5	49.9	40.9	31.4	24.4	21.4	16.4	33.6
Have another later ³	3.7	39.7	41.1	36.8	29.7	22.3	19.0	30.0
Have another, undecided when	2.4	5.5	5.6	4.8	3.2	2.3	1.0	3.6
Undecided	0.9	2.1	4.2	7.2	7.2	8.3	8.7	6.0
Want no more	1.1	1.8	6.8	18.0	33.1	42.4	50.3	24.2
Sterilised ⁴	0.0	0.0	0.1	0.3	0.3	0.3	0.5	0.2
Declared infecund	4.3	1.1	1.2	1.6	2.1	3.0	4.1	2.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Number of women	1,539	4,360	5,032	4,691	4,253	3,485	5,729	29,090

¹ The number of living children includes the current pregnancy.

² Wants next birth within 2 years

³ Wants to delay next birth for 2 or more years

⁴ Includes both female and male sterilisation

Fertility preferences are closely related to number of living children. Eighty-eight percent of women with no living children want a child soon, as compared with 31% of women with three children. In general, the more children a woman has, the higher the likelihood that she does not want another child.

3.6 FAMILY PLANNING

Family planning refers to a conscious effort by a couple to limit or space the number of children they have through the use of contraceptive methods. Contraceptive methods are classified as modern or traditional. Modern methods include female sterilisation, male sterilisation, the intrauterine contraceptive device (IUD), implants, injectables, the pill, condoms, and the lactational amenorrhoea method (LAM). Methods such as rhythm, withdrawal, and folk methods are grouped as traditional.

Table 6 shows the percent distribution of currently married women and sexually active unmarried women by the contraceptive method they currently use. Overall, 17% of currently married women use a method of family planning, with 12% using a modern method and 5% using a traditional method. Among currently married women, the most popular methods are implants, injectables, and withdrawal (each used by 3%), followed by male condoms (used by 2%). The contraceptive prevalence rate (CPR) among married women varies with age, rising from 3% among women age 15-19 to a peak of 23% among women age 35-39 before declining to 13% among women age 45-49.

Table 6 Current use of contraception according to background characteristics

Percent distribution of currently married women and sexually active unmarried women age 15-49 by contraceptive method currently used, according to background characteristics, Nigeria DHS 2018

Background characteristic	Modern method										Traditional method				Total	Number of women		
	Any method	Any modern method	Female sterilisation	Pill	IUD	Injectables	Implants	Male condom	Emergency contraception	LAM	Other ¹	Any traditional method	Rhythm	Withdrawal			Other	Not currently using
CURRENTLY MARRIED WOMEN																		
Number of living children																		
0	1.9	1.2	0.0	0.1	0.0	0.0	0.2	0.8	0.1	0.0	0.0	0.7	0.2	0.4	0.0	98.1	100.0	2,333
1-2	15.1	10.7	0.1	1.0	0.5	2.7	2.3	2.4	0.1	1.4	0.1	4.5	1.2	2.7	0.5	84.9	100.0	9,363
3-4	21.1	15.3	0.3	2.0	1.0	4.1	4.5	1.7	0.3	1.4	0.0	5.8	1.9	3.3	0.6	78.9	100.0	8,615
5+	17.8	13.2	0.4	1.5	1.2	3.9	4.3	0.8	0.1	1.0	0.1	4.6	1.5	2.2	0.9	82.2	100.0	8,779
Age																		
15-19	3.2	2.3	0.0	0.1	0.1	0.5	0.3	0.9	0.1	0.4	0.0	0.9	0.3	0.4	0.2	96.8	100.0	1,927
20-24	10.9	8.2	0.0	0.8	0.2	2.3	2.4	1.3	0.1	1.1	0.1	2.6	0.6	1.8	0.2	89.1	100.0	4,362
25-29	16.3	12.3	0.1	1.4	0.5	3.3	3.1	2.1	0.1	1.8	0.0	4.0	1.0	2.3	0.7	83.7	100.0	6,060
30-34	19.7	14.1	0.1	1.6	0.8	3.9	4.3	1.8	0.1	1.4	0.1	5.7	1.5	3.6	0.5	80.3	100.0	5,417
35-39	23.3	16.6	0.2	2.5	1.0	4.4	4.9	2.0	0.1	1.3	0.1	6.7	2.0	4.0	0.7	76.7	100.0	4,841
40-44	21.1	14.9	0.7	1.5	1.8	3.8	4.4	1.5	0.3	0.7	0.2	6.2	2.2	2.5	1.4	78.9	100.0	3,457
45-49	13.0	9.1	0.9	0.7	1.5	2.5	2.2	0.5	0.5	0.2	0.0	3.9	2.3	1.3	0.4	87.0	100.0	3,026
Residence																		
Urban	26.4	18.2	0.3	2.3	1.6	4.3	4.8	2.9	0.3	1.7	0.1	8.1	2.5	4.7	0.9	73.6	100.0	11,790
Rural	10.0	7.8	0.2	0.8	0.3	2.5	2.4	0.7	0.1	0.8	0.0	2.2	0.7	1.1	0.4	90.0	100.0	17,299
Zone																		
North Central	16.2	13.8	0.2	1.3	0.8	4.5	4.7	1.8	0.0	0.3	0.1	2.4	0.5	1.4	0.5	83.8	100.0	4,086
North East	9.5	7.8	0.5	1.0	0.1	2.3	1.7	0.2	0.0	1.9	0.0	1.7	0.9	0.4	0.4	90.5	100.0	4,841
North West	6.8	6.2	0.2	0.7	0.3	2.2	2.6	0.1	0.1	0.2	0.0	0.5	0.1	0.1	0.3	93.2	100.0	9,826
South East	28.1	12.9	0.1	1.3	1.1	2.1	2.9	2.8	0.1	2.5	0.0	15.2	7.1	7.8	0.3	71.9	100.0	2,893
South South	21.7	15.8	0.3	2.2	0.5	3.5	4.6	3.1	0.4	1.1	0.1	6.0	1.8	3.6	0.6	78.3	100.0	2,777
South West	35.1	24.4	0.2	2.8	2.8	5.9	5.2	4.2	0.6	2.5	0.2	10.8	1.8	7.1	1.9	64.9	100.0	4,666
State																		
North Central																		
FCT-Abuja	23.9	20.3	0.5	3.2	0.6	7.0	4.3	3.8	0.2	0.4	0.3	3.6	0.5	2.4	0.7	76.1	100.0	202
Benue	17.1	15.5	0.5	1.2	0.7	3.1	6.4	2.8	0.0	0.7	0.0	1.6	0.7	0.6	0.3	82.9	100.0	876
Kogi	18.3	11.8	0.4	1.2	0.9	2.9	2.4	3.4	0.2	0.1	0.4	6.5	1.9	4.1	0.5	81.7	100.0	428
Kwara	22.4	17.1	0.1	2.5	1.7	6.3	3.8	2.5	0.2	0.0	0.0	5.3	0.8	3.4	1.2	77.6	100.0	486
Nasarawa	14.8	14.3	0.1	1.8	0.8	3.0	7.2	0.9	0.0	0.4	0.2	0.6	0.0	0.4	0.2	85.2	100.0	416
Niger	7.6	6.4	0.1	0.4	0.2	2.5	2.3	0.8	0.0	0.2	0.0	1.1	0.0	0.8	0.3	92.4	100.0	1,108
Plateau	22.7	21.4	0.1	1.4	1.2	10.3	7.3	0.7	0.0	0.0	0.3	1.3	0.5	0.2	0.5	77.3	100.0	570
North East																		
Adamawa	25.1	18.2	0.1	0.8	0.1	6.0	4.1	0.2	0.0	6.9	0.0	6.9	6.1	0.1	0.7	74.9	100.0	624
Bauchi	6.5	5.2	0.2	1.6	0.0	1.9	1.0	0.1	0.0	0.3	0.0	1.3	0.1	0.3	0.9	93.5	100.0	1,134
Borno	6.2	5.4	1.2	1.2	0.2	1.5	0.6	0.6	0.1	0.0	0.0	0.8	0.0	0.8	0.0	93.8	100.0	953
Gombe	17.0	16.2	0.2	1.0	0.2	3.0	3.3	0.2	0.0	8.0	0.2	0.8	0.0	0.4	0.4	83.0	100.0	554
Taraba	10.3	8.6	1.1	0.8	0.2	2.6	3.2	0.5	0.0	0.1	0.0	1.7	0.9	0.6	0.2	89.7	100.0	580
Yobe	1.9	1.7	0.1	0.4	0.0	0.8	0.4	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.1	98.1	100.0	996

Continued...

Table 6—Continued

Background characteristic	Modern method						Traditional method						Number of women					
	Any method	Any modern method	Female sterilisation	Pill	IUD	Injectables	Implants	Male condom	Emergency contraception	LAM	Other ¹	Any traditional method		Rhythm	Withdrawal	Other	Not currently using	Total
North West																		
Jigawa	4.0	3.9	0.1	0.5	0.0	2.5	0.8	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	96.0	100.0	1,158
Kaduna	14.9	13.7	0.3	0.8	0.5	4.0	7.0	0.4	0.0	0.7	0.0	1.2	0.5	0.2	0.4	85.1	100.0	1,975
Kano	6.3	5.6	0.1	0.7	0.1	1.5	2.3	0.1	0.0	0.1	0.0	0.1	0.0	0.2	0.5	93.7	100.0	2,085
Katsina	3.4	3.3	0.1	0.7	0.0	1.2	1.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	96.6	100.0	1,772
Kebbi	3.5	3.2	0.0	0.8	0.0	1.6	0.7	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.3	96.5	100.0	945
Sokoto	2.3	2.1	0.0	0.6	0.0	0.8	0.7	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	97.7	100.0	777
Zamfara	7.3	6.7	0.6	0.8	0.2	2.7	2.2	0.2	0.0	0.0	0.0	0.6	0.0	0.2	0.4	92.7	100.0	1,116
South East																		
Abia	12.9	10.8	0.5	1.1	0.6	5.0	1.9	1.6	0.0	0.2	0.0	2.1	0.1	2.0	0.0	87.1	100.0	376
Anambara	44.6	17.2	0.0	0.8	2.6	1.9	2.8	5.0	0.0	4.2	0.0	27.4	14.6	12.3	0.5	55.4	100.0	905
Ebonyi	8.2	5.9	0.0	0.7	0.1	1.6	2.6	0.7	0.0	0.2	0.0	2.3	0.7	1.6	0.0	91.8	100.0	600
Enugu	30.9	17.6	0.0	2.4	0.4	1.9	6.3	2.3	0.3	3.9	0.0	13.4	5.0	8.2	0.1	69.1	100.0	458
Imo	30.7	10.9	0.1	1.7	0.6	1.3	1.6	2.6	0.5	2.4	0.2	19.8	8.4	10.8	0.5	69.3	100.0	554
South South																		
Akwa Ibom	19.8	15.7	0.0	3.0	0.7	3.8	3.0	4.1	0.0	1.1	0.0	4.1	2.9	0.9	0.3	80.2	100.0	490
Bayelsa	3.7	3.3	0.0	0.4	0.0	0.2	1.9	0.9	0.0	0.0	0.0	0.3	0.0	0.3	0.0	96.3	100.0	195
Cross River	20.0	18.9	0.3	1.9	0.4	3.4	11.5	1.0	0.0	0.2	0.1	10.0	0.3	0.9	0.0	80.0	100.0	318
Delta	16.5	12.9	0.4	2.1	1.2	2.9	3.0	1.0	0.0	1.8	0.3	3.6	1.3	1.4	0.9	83.5	100.0	551
Edo	19.4	15.0	0.2	3.5	0.3	5.1	3.6	1.4	0.1	0.8	0.0	4.3	1.6	2.7	0.0	80.6	100.0	370
Rivers	32.0	19.6	0.4	1.7	0.0	3.7	4.9	6.0	1.3	1.4	0.1	12.3	2.7	8.6	1.1	68.0	100.0	855
South West																		
Ekiti	38.5	25.4	0.4	3.4	4.3	4.1	5.5	6.2	0.5	1.0	0.0	13.1	3.3	9.0	0.8	61.5	100.0	326
Lagos	49.4	29.1	0.0	4.9	1.9	3.1	4.5	6.9	1.4	6.0	0.4	20.3	3.8	12.2	4.3	50.6	100.0	1,645
Ogun	32.1	16.6	0.5	1.6	0.6	7.3	2.3	3.8	0.2	0.2	0.1	15.5	0.2	13.3	2.0	67.9	100.0	624
Ondo	20.1	17.7	0.4	1.5	2.2	3.7	7.8	1.4	0.1	0.6	0.0	2.4	1.0	1.1	0.3	79.9	100.0	421
Osun	29.4	27.0	0.6	1.6	5.0	7.1	6.7	3.8	0.4	1.3	0.5	2.4	0.6	1.8	0.0	70.6	100.0	625
Oyo	22.6	22.2	0.0	1.1	4.2	10.1	6.0	0.8	0.0	0.0	0.0	0.4	0.0	0.2	0.1	77.4	100.0	1,024
Education																		
No education	5.2	4.3	0.2	0.4	0.2	1.5	1.1	0.1	0.1	0.7	0.0	0.9	0.3	0.2	0.4	94.8	100.0	12,955
Primary	19.4	14.1	0.2	1.7	0.9	4.8	4.0	1.2	0.2	1.2	0.1	5.3	1.3	3.0	1.0	80.6	100.0	4,580
Secondary	26.8	19.0	0.3	2.2	1.3	4.6	5.5	3.0	0.3	1.7	0.1	7.8	2.4	4.6	0.8	73.2	100.0	8,767
More than secondary	33.3	22.7	0.3	2.7	2.5	4.4	6.1	4.7	0.1	1.7	0.1	10.6	4.3	6.0	0.3	66.7	100.0	2,788
Wealth quintile																		
Lowest	4.4	3.7	0.1	0.2	0.2	1.5	1.0	0.1	0.0	0.6	0.0	0.7	0.2	0.3	0.3	95.6	100.0	6,008
Second	7.8	6.3	0.2	0.6	0.2	2.2	1.9	0.4	0.0	0.7	0.0	1.5	0.5	0.6	0.4	92.2	100.0	6,224
Middle	14.6	11.2	0.2	1.3	0.5	3.4	3.7	0.9	0.1	0.9	0.1	3.4	1.1	1.9	0.5	85.4	100.0	5,601
Fourth	25.2	18.0	0.3	2.5	1.3	4.4	4.9	2.3	0.4	1.7	0.1	7.3	2.1	4.0	1.2	74.8	100.0	5,599
Highest	33.0	22.3	0.4	2.5	2.0	4.9	5.6	4.4	0.3	1.9	0.2	10.7	3.6	6.3	0.8	67.0	100.0	5,657
Total	16.6	12.0	0.2	1.4	0.8	3.2	3.4	1.6	0.2	1.2	0.1	4.6	1.4	2.6	0.6	83.4	100.0	29,090

SEXUALLY ACTIVE UNMARRIED WOMEN²

Residence																			
Urban	39.1	28.2	0.0	3.4	0.3	1.7	1.6	17.6	2.6	0.0	1.0	10.8	2.1	5.8	2.9	60.9	100.0	909	
Rural	34.0	27.0	0.0	2.7	0.1	1.9	1.0	19.7	1.5	0.0	0.1	6.9	2.8	3.1	1.0	66.0	100.0	626	
Total	37.0	27.7	0.0	3.1	0.2	1.8	1.4	18.5	2.2	0.0	0.6	9.2	2.4	4.7	2.1	63.0	100.0	1,535	

Note: If more than one method is used, only the most effective method is considered in this tabulation.

LAM = Lactational amenorrhoea method

¹ Includes female condom, standard days method, and other modern methods

² Women who have had sexual intercourse within 30 days preceding the survey

Women in urban areas are more likely to use a contraceptive method than women in rural areas (26% and 10%, respectively). Use of contraception is highest among currently married women in the South West and lowest among those in the North West (35% versus 7%). Almost half of currently married women in Lagos use a method of contraception, as compared with only 2% of currently married women in Sokoto and Yobe. The use of implants is highest in Cross River (12%), while injectables are more popular in Plateau and Oyo (used by 10% of women in each state). Use of contraception increases with educational attainment, from 5% among women with no education to 19% among those with a primary education, 27% among those with a secondary education, and 33% among those with more than a secondary education. Women in the highest wealth quintile are more likely to use a method of contraception than those in the lowest quintile (33% versus 4%).

Table 6 also indicates that sexually active unmarried women are more likely to use a method of contraception than currently married women. Thirty-seven percent of sexually active unmarried women use a method of contraception, with 28% using a modern method. The most popular method among these women is the male condom (19%), followed by withdrawal (5%). Three percent of sexually active unmarried women use the pill, while 2% use emergency contraception.

3.7 NEED AND DEMAND FOR FAMILY PLANNING

The proportion of women who want to stop childbearing or who want to space their next birth is a crude measure of the extent of the need for family planning, given that not all of these women are exposed to the risk of pregnancy and some may already be using contraception. This section discusses a more refined extent of need and the potential demand for family planning services. Women who want to postpone their next birth for 2 or more years, or who want to stop childbearing altogether but are not using a contraceptive method, are said to have an unmet need for family planning. Pregnant women are considered to have an unmet need for spacing or limiting if their pregnancy was mistimed or unwanted, respectively. Similarly, amenorrhoeic women are categorised as having an unmet need if their last birth was mistimed or unwanted. Women who are currently using a family planning method are said to have a met need for family planning. Total demand for family planning services comprises those who fall in the met need and unmet need categories.

Table 7 presents data on unmet need, met need, and total demand for family planning among currently married women. These indicators help evaluate the extent to which family planning programmes in Nigeria meet the demand for services. Nineteen percent of currently married women have an unmet need for family planning services. Seventeen percent of married women are currently using a contraceptive method. Therefore, 36% of currently married women have a demand for family planning. At present, 47% of the potential demand for family planning is being met. Thus, if all married women who said they want to space or limit their children were to use family planning methods, the CPR would increase from 17% to 36%.

Table 7 Need and demand for family planning among currently married women and sexually active unmarried women

Percentage of currently married women and sexually active unmarried women age 15-49 with unmet need for family planning, percentage with met need for family planning, percentage with met need for family planning who are using modern methods, percentage with demand for family planning, percentage of the demand for family planning that is satisfied, and percentage of the demand for family planning that is satisfied with modern methods, according to background characteristics, Nigeria DHS 2018

Background characteristic	Unmet need for family planning	Met need for family planning (currently using)		Total demand for family planning ²	Number of women	Percentage of demand satisfied ³	
		All methods	Modern methods ¹			All methods	Modern methods ¹
CURRENTLY MARRIED WOMEN							
Age							
15-19	12.2	3.2	2.3	15.3	1,927	20.6	15.0
20-24	16.1	10.9	8.2	27.0	4,362	40.3	30.5
25-29	17.1	16.3	12.3	33.4	6,060	48.9	37.0
30-34	20.8	19.7	14.1	40.6	5,417	48.7	34.7
35-39	23.1	23.3	16.6	46.5	4,841	50.2	35.7
40-44	22.4	21.1	14.9	43.4	3,457	48.5	34.2
45-49	16.6	13.0	9.1	29.6	3,026	44.0	30.7
Residence							
Urban	19.9	26.4	18.2	46.2	11,790	57.0	39.4
Rural	18.2	10.0	7.8	28.2	17,299	35.5	27.7
Zone							
North Central	20.5	16.2	13.8	36.7	4,086	44.1	37.6
North East	19.0	9.5	7.8	28.6	4,841	33.4	27.4
North West	14.4	6.8	6.2	21.1	9,826	32.0	29.5
South East	17.7	28.1	12.9	45.8	2,893	61.4	28.1
South South	27.8	21.7	15.8	49.5	2,777	43.9	31.8
South West	22.3	35.1	24.4	57.4	4,666	61.2	42.4
State							
North Central							
FCT-Abuja	19.1	23.9	20.3	43.0	202	55.6	47.2
Benue	16.7	17.1	15.5	33.8	876	50.7	45.8
Kogi	25.9	18.3	11.8	44.2	428	41.4	26.8
Kwara	24.4	22.4	17.1	46.8	486	47.9	36.6
Nasarawa	23.7	14.8	14.3	38.5	416	38.5	37.0
Niger	19.2	7.6	6.4	26.8	1,108	28.3	24.0
Plateau	19.8	22.7	21.4	42.4	570	53.4	50.4
North East							
Adamawa	10.2	25.1	18.2	35.2	624	71.1	51.7
Bauchi	20.8	6.5	5.2	27.3	1,134	23.8	18.9
Borno	26.0	6.2	5.4	32.2	953	19.3	16.8
Gombe	16.8	17.0	16.2	33.8	554	50.4	48.0
Taraba	13.1	10.3	8.6	23.4	580	43.8	36.5
Yobe	20.6	1.9	1.7	22.5	996	8.6	7.4
North West							
Jigawa	14.5	4.0	3.9	18.4	1,158	21.6	21.1
Kaduna	12.3	14.9	13.7	27.2	1,975	54.8	50.6
Kano	16.5	6.3	5.6	22.8	2,085	27.8	24.7
Katsina	15.7	3.4	3.3	19.1	1,772	17.7	17.1
Kebbi	11.8	3.5	3.2	15.3	945	22.6	20.8
Sokoto	13.0	2.3	2.1	15.3	777	15.1	13.8
Zamfara	15.0	7.3	6.7	22.3	1,116	32.6	29.9
South East							
Abia	28.5	12.9	10.8	41.4	376	31.1	26.1
Anambara	9.6	44.6	17.2	54.2	905	82.3	31.8
Ebonyi	23.0	8.2	5.9	31.2	600	26.4	19.0
Enugu	13.8	30.9	17.6	44.8	458	69.1	39.2
Imo	21.0	30.7	10.9	51.7	554	59.4	21.1
South South							
Akwa Ibom	32.0	19.8	15.7	51.8	490	38.2	30.4
Bayelsa	29.9	3.7	3.3	33.5	195	10.9	9.9
Cross River	34.5	20.0	18.9	54.5	318	36.8	34.6
Delta	23.7	16.5	12.9	40.2	551	41.1	32.0
Edo	32.7	19.4	15.0	52.0	370	37.2	28.9
Rivers	23.0	32.0	19.6	55.0	855	58.1	35.7
South West							
Ekiti	18.2	38.5	25.4	56.7	326	67.9	44.7
Lagos	16.5	49.4	29.1	65.9	1,645	75.0	44.1
Ogun	17.6	32.1	16.6	49.8	624	64.6	33.4
Ondo	29.4	20.1	17.7	49.5	421	40.7	35.8
Osun	25.6	29.4	27.0	55.0	625	53.5	49.1
Oyo	30.6	22.6	22.2	53.2	1,024	42.5	41.8

Continued...

Table 7—Continued

Background characteristic	Unmet need for family planning	Met need for family planning (currently using)		Total demand for family planning ²	Number of women	Percentage of demand satisfied ³	
		All methods	Modern methods ¹			All methods	Modern methods ¹
Education							
No education	16.8	5.2	4.3	22.0	12,955	23.6	19.5
Primary	21.4	19.4	14.1	40.8	4,580	47.6	34.6
Secondary	21.2	26.8	19.0	48.1	8,767	55.8	39.6
More than secondary	17.1	33.3	22.7	50.4	2,788	66.0	45.0
Wealth quintile							
Lowest	16.3	4.4	3.7	20.7	6,008	21.1	17.8
Second	17.2	7.8	6.3	25.0	6,224	31.1	25.0
Middle	21.1	14.6	11.2	35.7	5,601	40.9	31.4
Fourth	21.6	25.2	18.0	46.8	5,599	53.9	38.3
Highest	18.6	33.0	22.3	51.6	5,657	64.0	43.2
Total	18.9	16.6	12.0	35.5	29,090	46.9	33.9
SEXUALLY ACTIVE UNMARRIED WOMEN⁴							
Residence							
Urban	45.7	39.1	28.2	84.8	909	46.1	33.3
Rural	52.3	34.0	27.0	86.3	626	39.4	31.3
Total	48.4	37.0	27.7	85.4	1,535	43.3	32.5

Note: Numbers in this table correspond to the revised definition of unmet need described in Bradley et al. 2012.

¹ Modern methods include female sterilisation, male sterilisation, pill, IUD, injectables, implants, male condom, female condom, emergency contraception, standard days method (SDM), lactational amenorrhoea method (LAM), and other modern methods.

² Total demand is the sum of unmet need and met need.

³ Percentage of demand satisfied is met need divided by total demand.

⁴ Women who have had sexual intercourse within 30 days preceding the survey

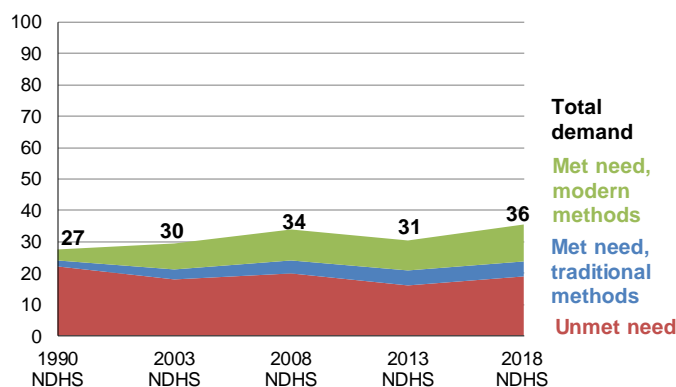
Unmet need for family planning is highest in the South South (28%) and lowest in the North West (14%). Women with no education and those with more than a secondary education have the lowest unmet need (17%).

Unmet need for family planning declined from 20% in 2008 to 16% in 2013 before increasing to 19% in 2018 (Figure 2). During the last 5 years, the use of modern methods has increased from 10% to 12%, and the total demand for

contraception has increased from 31% to 36%. Demand satisfied with modern methods has increased from 31% to 34% in the last 5 years.

Figure 2 Trends in demand for family planning

Percentage of currently married women age 15-49



3.8 EARLY CHILDHOOD MORTALITY

Infant and child mortality rates are basic indicators of a country's socioeconomic situation and quality of life (United Nations Development Program [UNDP] 2007). Estimates of child mortality are based on information collected in the birth history section of the Woman's Questionnaire, which includes questions about aggregate childbearing experience (that is, the number of sons and daughters who live with their mother, the number who live elsewhere, and the number who have died). Table 8 presents estimates for three successive 5-year periods prior to the 2018 NDHS. The rates are estimated directly from the information in the birth history on children's birth date, survivorship status, and age at death for children who died. This information is used to directly estimate the following five mortality rates:

- Neonatal mortality:** the probability of dying within the first month of life
- Postneonatal mortality:** the difference between infant and neonatal mortality
- Infant mortality:** the probability of dying before the first birthday
- Child mortality:** the probability of dying between the first and the fifth birthday
- Under-5 mortality:** the probability of dying between birth and the fifth birthday

All rates are expressed per 1,000 live births with the exception of child mortality, which is expressed per 1,000 children surviving to age 12 months.

As shown in Table 8, during the 5 years immediately preceding the survey, the infant mortality rate was 67 deaths per 1,000 live births. The child mortality rate was 69 deaths per 1,000 children surviving to age 12 months, while the overall under-5 mortality rate was 132 deaths per 1,000 live births. Fifty-one percent of all deaths among children under age 5 in Nigeria take place before a child’s first birthday, with 30% occurring during the first month of life. Child mortality accounts for 52% of all under-5 deaths.

Table 8 Early childhood mortality rates

Neonatal, postneonatal, infant, child, and under-5 mortality rates for 5-year periods preceding the survey, Nigeria DHS 2018

Years preceding the survey	Neonatal mortality (NN)	Postneonatal mortality (PNN) ¹	Infant mortality (1q0)	Child mortality (4q1)	Under-5 mortality (5q0)
0-4	39	28	67	69	132
5-9	34	29	63	66	125
10-14	32	32	64	80	139

¹ Computed as the difference between the infant and neonatal mortality rates

The 2018 NDHS documents that childhood mortality rates have stagnated during the last 5 years (Figure 3). After declining from 201 deaths per 1,000 live births during the 5 years immediately preceding the 2003 NDHS to 128 deaths per 1,000 live births in the 5 years prior to the 2013 NDHS, the overall under-5 mortality rate has increased slightly to 132 deaths per 1,000 live births in the most recent 5-year period. This is primarily due to the contribution of the child mortality (the probability of dying

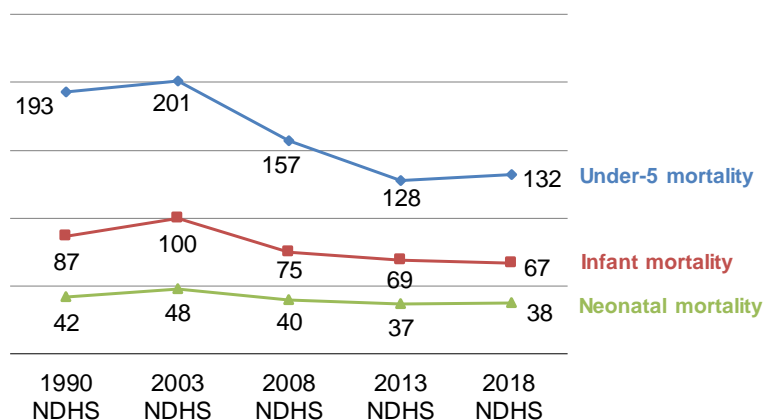
between the first and the fifth birthday). Infant mortality has decreased slightly, from 69 deaths per 1,000 live births in the 5 years prior to the 2013 NDHS to 67 deaths per 1,000 live births in the most recent 5-year period. Nigeria has much work to do to meet the SDG target of reducing the under-5 mortality rate.

3.9 MATERNAL CARE

Proper care during pregnancy and delivery is important for the health of both the mother and the baby. In the 2018 NDHS, women who had given birth in the 5 years preceding the survey were asked a number of questions about maternal care. Mothers were asked whether they had obtained antenatal care during the pregnancy for their most recent live birth in the 5 years preceding the survey and whether they had

Figure 3 Trends in early childhood mortality rates

Deaths per 1,000 live births in the 5- year period before the survey



received tetanus toxoid injections while pregnant. For each live birth over the same period, mothers were also asked what type of assistance they received at the time of delivery. Finally, women who had a live birth in the 2 years before the survey were asked if they received a postnatal checkup within 2 days of delivery. Table 9 summarises information on the coverage of these maternal health services.

3.9.1 Antenatal Care

Antenatal care (ANC) from a skilled provider is important to monitor pregnancy and reduce morbidity and mortality risks for the mother and child during pregnancy, at delivery, and during the postnatal period (42 days after delivery). The 2018 NDHS results show that 67% of women who gave birth in the 5 years preceding the survey received antenatal care from a skilled provider at least once for their last birth. Fifty-seven percent of women had four or more ANC visits.

Urban women were more likely than rural women to have received ANC from a skilled provider (84% and 56%, respectively) and to have had four or more ANC visits (74% and 46%, respectively). Women in the South East and South West are more likely to receive antenatal care from a skilled provider and to have four or more ANC visits than women in other zones. The proportion of women receiving ANC from a skilled provider varies from a high of 89% in the South East to a low of 54% in the North West. Women in the North West are less likely to have four or more ANC visits (42%) than women in the South East (83%) and South West (84%). Women who have more education are more likely than those who have less education to receive ANC from a skilled provider. For instance, 45% of women with no education received ANC from a skilled provider, as compared with 97% of women with more than a secondary education. The proportion of women who receive ANC from a skilled provider increases steadily with increasing wealth.

Table 9 Maternal care indicators

Among women age 15-49 who had a live birth in the 5 years preceding the survey, percentage who received antenatal care from a skilled provider for the most recent live birth, percentage with four or more ANC visits for the most recent live birth, and percentage whose most recent live birth was protected against neonatal tetanus; among all live births in the 5 years before the survey, percentage delivered by a skilled provider and percentage delivered in a health facility; and among women age 15-49 who had a live birth in the 2 years preceding the survey, percentage who received a postnatal check during the first 2 days after giving birth, according to background characteristics, Nigeria DHS 2018

Background characteristic	Women who had a live birth in the 5 years preceding the survey				Live births in the 5 years preceding the survey			Women who had a live birth in the 2 years preceding the survey	
	Percentage receiving antenatal care from a skilled provider ¹	Percentage with 4+ ANC visits	Percentage whose most recent live birth was protected against neonatal tetanus ²	Number of women	Percentage delivered by a skilled provider ¹	Percentage delivered in a health facility	Number of births	Percentage with a postnatal check during the first 2 days after birth ³	Number of women
Mother's age at birth									
<20	57.4	46.7	48.7	2,673	31.6	28.6	4,679	32.4	1,662
20-34	69.3	58.9	64.1	15,154	45.8	41.5	24,392	43.4	9,210
35-49	64.9	56.0	61.1	4,084	42.9	38.9	5,122	42.5	2,063
Residence									
Urban	83.6	73.7	77.4	8,712	66.2	61.1	13,170	61.4	4,979
Rural	56.1	45.7	51.3	13,199	29.1	25.8	21,023	29.6	7,956
Zone									
North Central	66.2	54.2	57.9	3,031	53.8	49.2	4,619	44.5	1,787
North East	58.5	44.0	54.0	3,862	27.7	25.4	6,213	33.7	2,350
North West	53.9	42.2	45.7	7,644	19.0	15.6	12,558	21.0	4,649
South East	89.2	82.9	92.0	2,138	84.3	81.8	3,428	71.6	1,304
South South	77.1	69.5	75.7	2,019	60.4	50.2	2,968	52.6	1,160
South West	88.2	84.2	83.2	3,218	81.0	76.3	4,407	77.3	1,685
State									
North Central									
FCT-Abuja	87.7	71.6	70.8	148	71.7	63.2	225	60.9	87
Benue	74.1	56.3	68.5	637	71.1	67.1	949	51.4	370
Kogi	79.5	71.2	67.3	299	77.6	72.4	451	73.5	167
Kwara	72.8	66.0	65.6	360	58.0	55.1	533	58.3	211
Nasarawa	77.1	67.3	66.5	329	57.5	49.8	521	43.0	189
Niger	41.5	33.0	39.8	844	30.6	25.8	1,312	23.6	535
Plateau	72.4	55.1	53.6	415	46.3	43.9	628	42.9	228
North East									
Adamawa	82.1	66.5	74.4	518	40.8	38.9	786	51.4	326
Bauchi	51.6	42.3	47.6	919	27.0	21.8	1,469	42.0	590
Borno	50.7	34.4	42.0	732	29.5	26.2	1,219	31.2	418
Gombe	46.4	44.4	61.4	444	21.1	27.7	728	33.0	277
Taraba	57.4	49.9	49.6	495	37.3	30.0	758	25.1	299
Yobe	66.3	35.8	58.1	755	16.3	16.2	1,253	18.3	441
North West									
Jigawa	78.6	47.9	57.8	898	21.3	20.1	1,497	23.4	552
Kaduna	69.0	54.1	50.9	1,453	23.3	17.6	2,402	23.7	885
Kano	65.3	51.0	65.3	1,682	23.6	19.2	2,738	23.2	1,001
Katsina	53.1	38.4	42.5	1,440	19.1	16.5	2,428	16.5	876
Kebbi	14.7	27.4	23.5	716	9.4	7.4	1,228	17.6	451
Sokoto	24.3	30.7	28.5	608	12.9	7.8	978	31.5	362
Zamfara	35.2	25.9	21.9	848	12.4	10.8	1,287	13.4	521
South East									
Abia	95.2	89.2	93.6	259	94.9	92.0	426	57.1	156
Anambara	93.3	82.5	93.4	664	91.3	90.4	1,045	82.1	430
Ebonyi	70.3	74.2	87.3	493	58.3	56.6	814	50.2	298
Enugu	94.7	88.1	89.0	317	89.9	79.5	486	80.5	183
Imo	97.4	86.2	96.9	405	94.2	94.5	657	82.1	237
South South									
Akwa Ibom	74.5	65.1	69.5	360	39.2	34.7	522	61.3	216
Bayelsa	51.4	25.9	52.2	144	25.1	22.9	217	26.5	87
Cross River	79.5	65.7	71.3	231	56.2	52.6	318	42.9	117
Delta	73.2	71.7	76.3	408	63.4	54.9	595	59.6	239
Edo	89.2	71.9	82.1	270	89.7	80.1	411	72.2	150
Rivers	81.0	81.2	83.2	606	67.2	48.2	906	43.8	350
South West									
Ekiti	90.6	86.4	88.2	226	79.0	71.8	329	81.6	128
Lagos	86.4	80.2	84.1	1,142	80.1	75.7	1,545	72.8	599
Ogun	85.0	90.9	83.2	423	77.0	73.4	586	77.7	220
Ondo	92.0	84.3	82.0	312	82.8	80.7	423	75.0	157
Osun	96.9	95.6	80.9	409	94.7	91.6	549	82.4	198
Oyo	85.4	79.5	82.3	706	76.8	70.1	976	81.2	383

Continued...

Table 9—Continued

Background characteristic	Women who had a live birth in the 5 years preceding the survey				Live births in the 5 years preceding the survey			Women who had a live birth in the 2 years preceding the survey	
	Percentage receiving antenatal care from a skilled provider ¹	Percentage with 4+ ANC visits	Percentage whose most recent live birth was protected against neonatal tetanus ²	Number of women	Percentage delivered by a skilled provider ¹	Percentage delivered in a health facility	Number of births	Percentage with a postnatal check during the first 2 days after birth ³	Number of women
Mother's education									
No education	45.2	34.5	40.4	9,738	16.0	13.8	15,858	19.4	5,786
Primary	74.6	62.9	67.6	3,293	45.8	40.5	5,103	44.3	1,877
Secondary	85.7	76.4	80.9	6,962	70.8	64.6	10,413	61.8	4,186
More than secondary	97.3	88.9	89.7	1,919	92.0	87.7	2,818	80.1	1,086
Wealth quintile									
Lowest	40.5	30.7	38.2	4,716	13.4	11.6	7,572	18.1	2,775
Second	52.8	42.6	48.4	4,850	23.6	21.1	7,782	24.5	2,955
Middle	72.5	60.6	64.6	4,448	45.4	40.3	7,043	41.9	2,666
Fourth	84.3	73.2	77.3	4,103	65.9	59.2	6,254	61.4	2,416
Highest	93.1	85.4	87.3	3,794	84.3	79.5	5,541	74.5	2,123
Total	67.0	56.8	61.7	21,911	43.4	39.4	34,193	41.8	12,935

Note: If more than one source of assistance was mentioned, only the provider with the highest qualifications is considered in this tabulation.

¹ Skilled provider includes doctor, nurse, midwife, and auxiliary nurse/midwife.

² Includes mothers with two injections during the pregnancy of their most recent live birth, or two or more injections (the last within 3 years of the most recent live birth), or three or more injections (the last within 5 years of the most recent live birth), or four or more injections (the last within 10 years of the most recent live birth), or five or more injections at any time prior to the last live birth

³ Includes women who received a check from a doctor, midwife, nurse, community health extension worker, or traditional birth attendant

3.9.2 Tetanus Toxoid

Tetanus toxoid injections are given during pregnancy to prevent neonatal tetanus, a major cause of early infant death in many developing countries, often due to failure to observe hygienic procedures during delivery. Table 9 shows that 62% of women with a birth in the 5 years before the survey received sufficient doses of tetanus toxoid to protect their last birth against neonatal tetanus. The percentage of women whose last birth was protected from tetanus varies with level of education and wealth. Women with no education and those in the lowest wealth quintile are substantially less likely to have had their last birth protected from tetanus. For instance, 40% of women with no education had their last birth protected from tetanus, as compared with 90% of women with more than a secondary education.

3.9.3 Delivery Care

Access to proper medical attention and hygienic conditions during delivery can reduce the risk of complications and infections that may lead to death or serious illness for the mother and/or baby (Van Lerberghe and De Brouwere 2001; WHO 2006). The survey data show that, in Nigeria, 43% of the births in the 5 years preceding the survey were delivered by a skilled provider and 39% were delivered in a health facility (Table 9).

Births in urban areas are far more likely to benefit from skilled delivery care than those in rural areas. Sixty-six percent of births to urban mothers were assisted by a skilled provider and 61% were delivered in a health facility, as compared with 29% and 26%, respectively, of births to rural women. Eighty-four percent of births in the South East were assisted by a skilled provider, compared with only 19% of those in the North West. There is a sizeable disparity in maternity care by state; while 95% of births in Osun and Abia were assisted by skilled providers, only 9% of births in Kebbi and 12% in Zamfara were assisted by skilled providers.

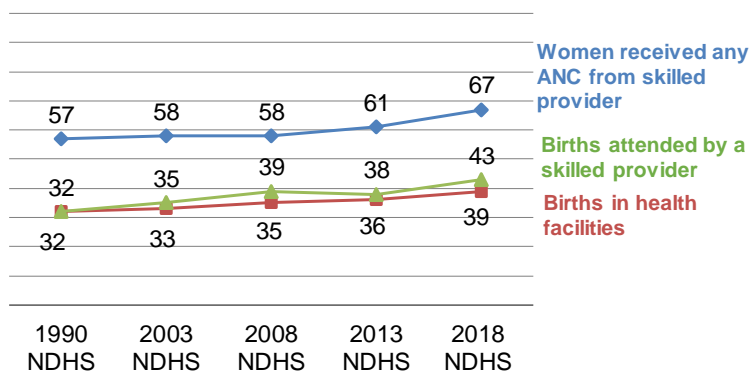
Mothers' educational status correlates highly with whether their delivery is assisted by a skilled provider and whether the birth is delivered in a health facility. For example, 16% of births to mothers with no education were assisted by a skilled provider and 14% were delivered in a health facility, as compared with

92% and 88%, respectively, of births to mothers with more than a secondary education. A similar relationship is observed with wealth.

There has been a gradual improvement in maternal health care indicators over the last decade. The percentage of women receiving ANC from a skilled provider increased from 58% in 2008 to 67% in 2018 (Figure 4). There were similar improvements in the percentage of births delivered at a health facility (from 35% to 39%) and the percentage of births attended by skilled providers (from 39% to 43%).

Figure 4 Trends in maternal health care

Percentage of women age 15-49 who had a live birth in the 5 years before the survey (for the most recent birth)



3.9.4 Postnatal Care for the Mother

A large proportion of maternal and neonatal deaths occur during the first 48 hours after delivery. Thus, prompt postnatal care (PNC) for both the mother and the child is important to treat any complications arising from the delivery, as well as to provide the mother with important information on how to care for herself and her child. Safe motherhood programmes recommend that all women receive a check of their health within 2 days after delivery.

To assess the extent of postnatal care utilisation, respondents were asked, for their last birth in the 2 years preceding the survey, whether they had received a checkup after delivery and the timing of the first checkup. As shown in Table 9, 42% of women reported having received a PNC checkup in the first 2 days after birth.

The proportion of women receiving a postnatal checkup within 2 days of delivery is higher in urban than rural areas (61% and 30%, respectively) and increases with increasing education and wealth.

3.10 CHILD HEALTH AND NUTRITION

The 2018 NDHS collected data on a number of key child health indicators, including vaccinations of young children, nutritional status as assessed by anthropometry, infant feeding practices, and treatment practices when a child is ill.

3.10.1 Vaccination of Children

Universal immunisation of children against six common vaccine-preventable diseases, namely tuberculosis, diphtheria, whooping cough (pertussis), tetanus, polio, and measles, is crucial to reducing infant and child mortality. The vaccine given in Nigeria against diphtheria, whooping cough, and tetanus (DPT) also protects against hepatitis B (HepB) and *Haemophilus influenzae* type b (Hib) and is called the DPT-HepB-Hib or pentavalent vaccine. Pentavalent was introduced in Nigeria in May 2012. A phased rollout of the pneumococcal conjugate vaccine (PCV) that protects against *Streptococcus pneumoniae* bacteria, which cause severe pneumonia, meningitis, and other illnesses, commenced on December 22, 2014, in Nigeria. On February 20, 2015, Nigeria introduced one dose of inactivated poliomyelitis vaccine (IPV) at 14 weeks of age into its national routine immunisation schedule. The IPV does not replace the oral polio vaccine but is used with that vaccine to strengthen a child's immune system and protect against polio.

Nigeria has established a schedule for the administration of all basic childhood vaccines based on the World Health Organization's guidelines. Historically, an important measure of vaccination coverage has been the proportion of children age 12-23 months who have received all "basic" vaccinations. A child is considered to have received all basic vaccinations if he or she has received a bacille Calmette-Guérin (BCG) vaccination against tuberculosis; three doses of DPT vaccine to prevent diphtheria, pertussis, and tetanus; at least three doses of polio vaccine; and one dose of measles vaccine. These vaccinations should be received during the first year of life. BCG should be given shortly after birth or at first clinical contact. Polio vaccine should be given at approximately age 6 weeks, 10 weeks, and 14 weeks. Pentavalent vaccine should also be given at approximately age 6, 10, and 14 weeks. Measles vaccine should be given at or soon after the child reaches age 9 months.

A second, more critical measure of vaccination coverage is the proportion of children age 12-23 months and 24-35 months who have received all age-appropriate vaccinations. A child age 12-23 months is considered to have received all age-appropriate vaccinations if the child has received all basic vaccinations along with a birth dose of hepatitis B and polio vaccine, one dose of inactivated polio vaccine, and three doses of pneumococcal vaccine (also given at age 6, 10, and 14 weeks). Similarly, a child who is age 24-35 months has received all age-appropriate vaccinations if the child has received a second dose of measles given at 18 months in addition to all of the age-appropriate vaccinations relevant for a child age 12-23 months.

In the 2018 NDHS, information on vaccination coverage was obtained in two ways—from health cards and from mothers' verbal reports. All mothers were asked to show the interviewer the cards on which vaccination dates are recorded for all children born since January 2015. If the card was available, the interviewer then recorded from the card the dates of each vaccination received. In cases in which the card indicated the child had not received all basic vaccinations, the mother was asked whether the child had received other vaccinations that were not recorded on the card, and, if so, they too were recorded. If there was no card, or if the mother was unable to show the card to the interviewer, the child's vaccination information was based on the mother's recall. The mother was asked to recall whether the child had received the BCG, hepatitis B (birth dose), polio, pentavalent, pneumococcal, inactivated polio vaccine, and measles vaccines. If she indicated that the child had received the polio, pentavalent, pneumococcal, or measles vaccine, she was asked about the number of doses that the child received. The results presented here are based on the vaccination card and, for those children without a card, information provided by the mother. Cards were seen for 40% of children age 12-23 months and 29% of children age 24-35 months (data not shown).

Table 10 pertains to children age 12-23 months and 24-35 months, the age by which children should have received all basic vaccinations. Overall, 31% of children have received all basic vaccinations, and 21% have received all age-appropriate vaccinations. Sixty-seven percent of children have received BCG, 65% have received the first dose of pentavalent, and 74% have received polio 1. Fifty percent and 47% of children have received the third doses of the pentavalent and polio vaccines, respectively. Coverage of vaccination against measles is 54%. Nineteen percent of children in Nigeria have not received any vaccinations.

Table 10—Continued

Background characteristic	HepB (birth dose) ¹			DPT-HepB-Hib			Polio ²			Pneumococcal			Children age 24-35 months:						
	BCG	1	2	1	2	3	0 (birth dose)	1	2	3	IPV	Measles 1	All basic vaccinations ³	All age-appropriate vaccinations ⁴	No vaccinations	Number of children	Measles 2	All age-appropriate vaccinations ⁵	Number of children
South East																			
Abia	95.7	93.5	88.3	80.4	87.3	89.3	79.6	49.1	81.6	93.3	87.3	78.3	39.0	28.9	4.3	69	40.8	0.7	78
Anambara	91.8	90.1	87.3	87.3	87.3	91.3	90.8	84.4	86.6	90.1	88.8	88.0	75.8	60.4	7.2	221	11.9	9.6	182
Ebonyi	95.9	95.5	92.1	82.4	74.7	96.0	91.1	66.4	79.4	94.0	89.6	81.5	44.8	26.3	1.7	148	27.2	11.8	154
Enugu	92.5	86.9	83.8	80.9	86.6	75.4	75.4	46.3	87.8	71.3	63.5	60.2	36.4	19.9	6.8	87	27.0	3.6	106
Imo	92.7	82.7	84.4	79.5	85.5	90.0	82.4	70.9	80.0	89.2	83.3	76.3	62.6	51.3	5.0	117	20.2	13.4	118
South South																			
Akwia Ikom	84.1	67.9	70.8	62.2	62.9	81.7	74.0	58.5	71.4	82.6	66.5	60.4	42.0	28.3	9.6	118	23.2	4.0	77
Bayelsa	65.5	59.3	71.5	54.5	59.2	70.9	56.7	25.7	69.3	68.7	59.4	49.0	18.0	12.4	20.1	50	28.7	3.2	38
Cross River	88.8	60.0	81.8	64.1	54.8	88.7	80.4	55.6	70.7	88.3	83.8	63.7	46.0	21.8	4.4	53	15.9	3.3	67
Delta	82.5	67.9	81.1	71.7	66.9	84.0	82.5	56.4	76.0	81.5	78.6	70.8	44.4	30.0	12.5	127	11.6	4.7	95
Edo	95.0	81.9	93.5	86.0	84.8	86.8	80.3	67.6	91.1	93.5	90.0	82.6	56.3	48.2	5.0	72	16.4	5.1	72
Rivers	83.8	60.6	85.1	74.5	69.9	85.8	83.0	47.8	70.5	82.8	78.2	72.8	39.2	28.5	11.0	172	19.3	4.0	164
South West																			
Ekiti	94.8	91.3	95.0	93.0	92.1	95.0	93.5	49.4	79.2	95.0	95.0	91.8	41.1	26.8	3.4	68	11.4	3.5	52
Lagos	97.3	92.0	94.1	90.8	95.1	95.0	91.7	67.3	87.0	97.0	93.8	90.0	62.4	56.2	1.7	329	22.8	10.6	283
Ogun	74.1	68.3	73.4	59.9	67.6	71.8	54.9	32.5	57.5	73.4	58.9	48.8	23.1	20.9	17.8	121	13.0	2.4	109
Ondo	83.7	74.4	82.1	77.0	76.8	85.5	83.4	53.5	79.4	80.9	75.5	70.4	73.5	39.7	12.4	75	18.6	11.1	77
Osun	94.3	84.0	88.9	83.5	70.4	82.2	77.8	38.4	82.8	85.0	83.0	77.9	33.8	17.2	5.7	102	28.1	0.0	116
Oyo	88.6	82.7	83.2	44.3	83.4	67.2	44.7	33.9	63.2	70.7	55.3	39.2	23.3	16.6	9.3	179	31.7	14.1	173
Education																			
No education	41.0	26.5	39.8	24.7	27.9	59.3	51.7	35.7	27.9	35.7	28.3	22.2	14.8	7.0	33.6	2,645	8.2	1.3	2,561
Primary	74.7	56.7	72.7	55.4	59.6	76.6	69.4	49.1	57.1	68.7	60.5	51.6	32.7	20.1	15.1	877	15.6	4.8	894
Secondary	87.8	73.7	86.5	79.0	75.9	85.1	78.6	55.6	73.7	82.5	75.4	67.6	43.3	31.4	7.2	2,052	20.6	7.1	1,812
More than secondary	97.6	89.9	92.1	86.5	93.4	94.1	89.6	67.8	87.1	93.7	88.9	84.6	89.5	50.2	1.1	570	32.8	11.8	567
Wealth quintile																			
Lowest	40.2	24.8	33.1	24.7	26.9	61.8	54.3	36.0	28.3	35.6	28.5	22.2	14.5	7.4	32.4	1,349	8.7	1.4	1,222
Second	52.5	35.2	51.1	35.7	37.5	65.5	59.3	40.2	37.8	46.6	39.7	32.5	20.0	9.3	27.8	1,327	9.3	2.0	1,267
Middle	70.6	53.5	69.0	50.7	56.5	74.7	65.7	46.3	53.6	64.5	56.2	47.6	29.3	17.6	17.2	1,226	16.1	4.3	1,198
Fourth	84.1	71.5	80.9	66.5	72.4	80.0	73.7	51.4	68.7	78.4	70.6	63.3	40.2	28.7	10.6	1,172	20.5	7.1	1,114
Highest	94.0	86.5	93.4	87.9	88.6	90.4	85.2	66.7	84.3	90.5	84.5	79.6	58.9	48.3	3.3	1,070	25.4	9.6	1,033
Total	66.7	52.4	65.3	57.8	54.5	73.6	66.7	47.2	52.9	61.5	54.2	47.3	31.3	21.0	19.2	6,143	15.6	4.7	5,835

Note: Children are considered to have received the vaccine if it was either written on the child's vaccination card or reported by the mother. For children whose vaccination information is based on the mother's report, date of vaccination is not collected. The proportions of vaccinations given during the first and second years of life are assumed to be the same as for children with a written record of vaccination.

BCG = Bacille Calmette-Guérin

DPT = Diphtheria-pertussis-tetanus

HepB = Hepatitis B

Hib = *Haemophilus influenzae* type b

IPV = Inactivated polio vaccine

¹ For children whose vaccination information is based on the mother's report, children reported to have received HepB (birth dose) received the vaccine within 24 hours after birth. For children whose vaccination information is based on the written record of vaccination, children are considered to have received hepatitis B (birth dose) if this vaccine is recorded on their card, regardless of when the dose was administered.

² Polio 0 is the polio vaccination given at birth.

³ BCG, three doses of DPT-HepB-Hib (pentavalent), three doses of oral polio vaccine (excluding polio vaccine given at birth), and one dose of measles

⁴ BCG, hepatitis B (birth dose), three doses of DPT-HepB-Hib (pentavalent), four doses of oral polio vaccine, one dose of inactivated polio vaccine, three doses of pneumococcal vaccine, and one dose of measles

⁵ BCG, hepatitis B (birth dose), three doses of DPT-HepB-Hib (pentavalent), four doses of oral polio vaccine, one dose of inactivated polio vaccine, three doses of pneumococcal vaccine, and two doses of measles

Basic vaccination coverage differs slightly by residence, with urban children more likely to receive all basic vaccinations than rural children (44% versus 23%). A similar pattern is seen for all age-appropriate vaccinations (33% and 13%, respectively). Children in the North West are less likely to receive all basic vaccinations than children in the South East (20% versus 57%). Less than 10% of children in Zamfara (7%), Kebbi (6%), and Sokoto (5%) received all basic vaccinations. Vaccination coverage improves with increasing mother's education and wealth.

Figure 5 indicates that the percentage of children age 12-23 who received all basic vaccinations has improved over the past 5 years, from 25% to 31% (an improvement of 24%). Similarly, the percentage of children receiving no basic vaccinations has dropped from 21% to 19%.

3.10.2 Childhood Acute Respiratory Infection, Fever, and Diarrhoea

Acute respiratory infection (ARI), fever, and dehydration from diarrhoea are important contributing causes of childhood morbidity and mortality in developing countries (WHO 2003). Prompt medical attention when a child has the symptoms of these illnesses is, therefore, crucial in reducing child deaths. In the 2018 NDHS, for each child under age 5, mothers were asked if the child had experienced a cough accompanied by short, rapid breathing or difficulty in breathing as a result of a chest-related problem (symptoms of ARI); a fever; or an episode of diarrhoea in the 2 weeks preceding the survey. Respondents were also asked if treatment was sought when the child was ill. Overall, 3% of children under age 5 showed symptoms of ARI, 24% had a fever, and 13% experienced diarrhoea in the 2 weeks preceding the survey (data not shown). It should be noted that the morbidity data collected are subjective because they are based on a mother's perception of illnesses without validation by medical personnel.

Table 11 shows that treatment from a health facility or provider was sought for 73% of children with ARI symptoms and 72% of those with a fever. Treatment was sought from a health facility or health provider for 64% of children with diarrhoea. Forty percent of children with diarrhoea received a rehydration solution from an oral rehydration salt (ORS) packet; 31% of children with diarrhoea were given zinc supplements, and 23% received both ORS and zinc supplements.

Figure 5 Nutritional Status of Children by Age

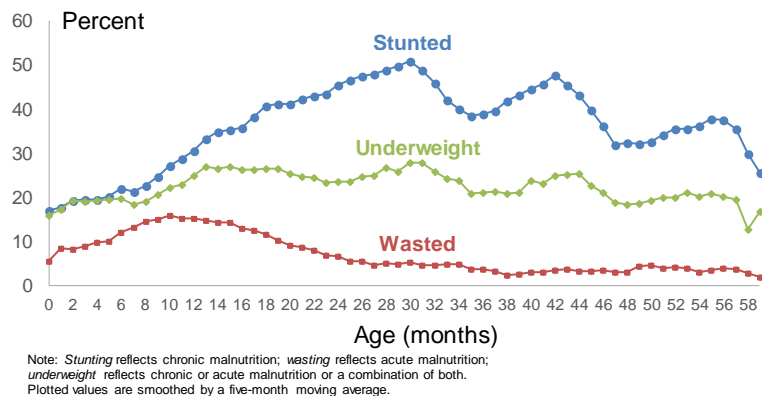


Table 11 Treatment for acute respiratory infection, fever, and diarrhoea

Among children under age 5 who had symptoms of acute respiratory infection (ARI) or had a fever in the 2 weeks preceding the survey, percentage for whom advice or treatment was sought, and among children under age 5 who had diarrhoea during the 2 weeks preceding the survey, percentage for whom advice or treatment was sought, percentage given a fluid made from oral rehydration salt (ORS) packets, percentage given zinc, and percentage given ORS and zinc, according to background characteristics, Nigeria DHS 2018

Background characteristic	Children with symptoms of ARI ¹		Children with fever		Children with diarrhoea				
	Percentage for whom advice or treatment was sought ²	Number of children	Percentage for whom advice or treatment was sought ²	Number of children	Percentage for whom advice or treatment was sought ²	Percentage given fluid from ORS packet	Percentage given zinc	Percentage given ORS and zinc	Number of children
Age in months									
<6	72.6	87	69.5	497	53.3	31.4	20.3	15.4	315
6-11	82.3	116	69.2	914	65.3	37.8	32.0	22.1	632
12-23	72.7	210	72.8	1,826	66.4	45.6	33.7	25.4	1,242
24-35	77.5	141	72.9	1,541	66.0	40.6	32.1	23.9	807
36-47	62.6	122	71.5	1,418	62.5	37.1	29.4	20.8	537
48-59	72.5	139	70.4	1,270	61.6	36.2	30.6	21.8	416
Sex									
Male	73.2	417	72.3	3,702	64.3	40.0	30.3	21.0	1,995
Female	73.4	397	70.6	3,764	63.8	40.1	32.0	24.6	1,955
Residence									
Urban	81.0	239	78.4	2,269	68.6	50.0	37.8	29.8	1,171
Rural	70.1	575	68.5	5,197	62.1	35.8	28.3	19.8	2,779
Zone									
North Central	60.0	55	58.1	754	55.5	38.3	22.9	17.8	486
North East	71.3	461	69.1	1,959	63.7	36.8	22.0	17.5	1,378
North West	83.9	146	74.3	3,039	68.1	41.2	41.9	28.8	1,504
South East	54.4	52	70.1	643	60.1	43.7	27.5	22.9	196
South South	90.6	66	81.6	710	69.2	43.3	32.7	21.9	170
South West	(72.4)	34	71.5	360	56.7	50.8	35.1	26.4	216
State									
North Central									
FCT-Abuja	*	5	80.1	49	87.5	41.4	30.0	20.0	17
Benue	*	3	93.7	111	92.4	38.8	33.6	18.4	101
Kogi	*	1	50.6	46	(32.9)	(32.5)	(7.9)	(2.4)	26
Kwara	*	2	54.0	57	(60.7)	(35.3)	(6.6)	(6.6)	41
Nasarawa	*	11	48.5	48	(83.0)	(80.2)	(75.1)	(71.7)	27
Niger	*	19	48.9	338	32.4	42.0	20.3	19.1	197
Plateau	*	16	49.8	105	54.3	15.6	9.3	4.9	75
North East									
Adamawa	40.7	97	48.1	199	47.5	39.3	24.9	17.4	76
Bauchi	83.5	143	69.6	652	65.0	35.8	20.6	17.0	449
Borno	(95.6)	38	79.0	182	78.1	77.3	44.2	42.6	101
Gombe	83.5	39	75.1	232	70.2	24.9	21.4	11.1	220
Taraba	44.2	48	52.6	196	35.5	9.3	3.0	1.7	158
Yobe	83.0	97	76.7	497	69.5	45.0	25.3	21.9	373
North West									
Jigawa	(88.1)	40	79.3	432	69.7	63.9	60.1	49.2	243
Kaduna	*	16	62.3	527	45.7	4.7	20.3	2.1	241
Kano	(95.9)	38	84.0	638	79.0	52.8	45.6	37.2	428
Katsina	*	19	79.4	612	68.5	39.8	44.5	28.6	294
Kebbi	*	11	73.4	391	62.0	39.4	38.4	22.3	97
Sokoto	*	13	73.5	278	75.4	36.8	36.9	20.5	158
Zamfara	*	10	44.8	160	(61.9)	(32.3)	(30.4)	(24.1)	45
South East									
Abia	*	1	85.0	30	*	*	*	*	12
Anambara	*	6	95.5	137	(91.8)	(68.9)	(58.0)	(51.1)	31
Ebonyi	(49.5)	30	64.1	246	53.5	40.6	25.3	20.1	80
Enugu	*	3	82.5	64	*	*	*	*	18
Imo	*	12	50.7	167	44.5	40.2	18.6	17.8	54
South South									
Akwa Ibom	*	14	69.5	180	(57.4)	(30.8)	(17.4)	(15.3)	39
Bayelsa	*	4	71.8	21	*	*	*	*	3
Cross River	*	3	83.5	50	*	*	*	*	13
Delta	*	4	*	30	*	*	*	*	22
Edo	*	0	79.3	72	*	*	*	*	17
Rivers	(95.4)	41	89.2	356	71.5	41.7	30.6	20.5	77
South West									
Ekiti	*	2	62.7	53	(35.7)	(32.7)	(54.1)	(20.8)	28
Lagos	*	12	73.1	97	(65.2)	(65.2)	(37.0)	(34.1)	57
Ogun	*	2	*	28	*	*	*	*	5
Ondo	*	1	62.3	50	(42.3)	(34.3)	(7.3)	(7.3)	27
Osun	*	2	65.8	72	(35.9)	(47.2)	(21.7)	(21.7)	46
Oyo	*	15	(80.8)	60	(80.0)	(53.3)	(47.2)	(32.1)	53

Continued...

Table 11—Continued

Background characteristic	Children with symptoms of ARI ¹		Children with fever		Children with diarrhoea				
	Percentage for whom advice or treatment was sought ²	Number of children	Percentage for whom advice or treatment was sought ²	Number of children	Percentage for whom advice or treatment was sought ²	Percentage given fluid from ORS packet	Percentage given zinc	Percentage given ORS and zinc	Number of children
Mother's education									
No education	70.2	436	66.8	3,982	61.1	37.0	28.7	21.3	2,256
Primary	68.9	152	74.3	1,137	68.2	43.0	28.9	21.7	601
Secondary	80.9	199	77.0	1,982	67.7	42.4	35.8	24.3	925
More than secondary	(93.6)	27	83.9	364	68.3	57.8	45.6	37.3	168
Wealth quintile									
Lowest	68.7	277	64.6	2,153	58.7	33.4	25.9	19.1	1,234
Second	69.3	208	69.2	1,930	62.9	36.0	25.2	18.3	1,051
Middle	73.7	145	72.4	1,510	66.3	40.9	36.1	24.8	776
Fourth	78.8	112	78.4	1,128	65.6	47.6	38.7	28.0	564
Highest	93.8	72	84.9	745	80.0	63.1	45.2	37.5	325
Total	73.3	814	71.5	7,466	64.1	40.0	31.1	22.8	3,950

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

¹ Symptoms of ARI include short, rapid breathing that is chest-related and/or difficult breathing that is chest-related.

² Excludes advice or treatment from a traditional practitioner

3.10.3 Nutritional Status of Children

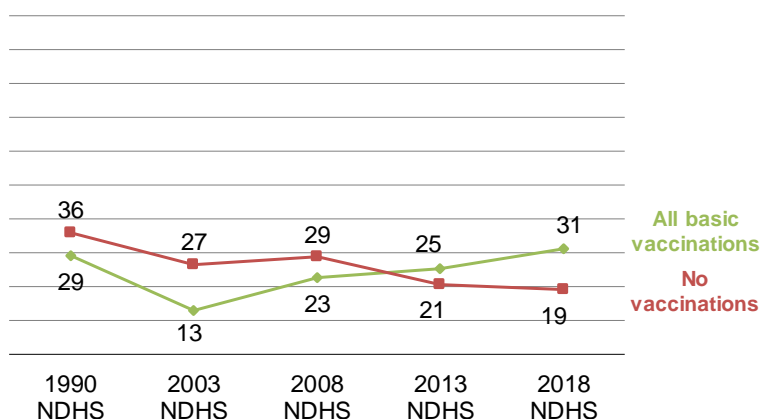
Anthropometric measurements (height and weight) for young children were collected in the 2018 NDHS to provide outcome measures of nutritional status. Each team of interviewers carried a scale and measuring board. Weight measurements were taken using lightweight SECA scales with digital displays (model no. SECA 878U), which were designed and manufactured under the authority of the United Nations Children's Fund (UNICEF). Height/length measurements were taken using a standard measuring board (Shorr Board®). Recumbent length (lying down) was measured for children younger than age 24 months; standing height was measured for older children.

As recommended by WHO, evaluation of nutritional status in this report is based on a comparison of three indices for the children in the survey with indices reported for a reference population of well-nourished children (WHO Multicentre Growth Reference Study Group 2006). The three indices (height-for-age, weight-for-height, and weight-for-age) are expressed as standard deviation units from the median for the reference group. Children who fall below minus two standard deviations (-2 SD) from the median

of the reference population are regarded as moderately malnourished, while those who fall below minus three standard deviations (-3 SD) from the reference population median are considered severely malnourished. Each of these indices provides information about growth and body composition that is useful in assessing nutritional status. *Stunting*, or low height-for-age, is a sign of chronic undernutrition that reflects failure to receive adequate nutrition over a long period. The most direct causes are (1) not eating enough or eating foods that lack growth-promoting nutrients and (2) recurrent infections or chronic diseases that cause poor nutrient intake, absorption, or utilisation. *Wasting*, or low weight-for-height, is a

Figure 6 Trends in childhood vaccinations

Percentage of children age 12-23 months who received all basic vaccines at any time before the survey



measure of acute undernutrition. It represents a failure to receive adequate nutrition in the period immediately before the survey. Wasting may result from inadequate food intake or from a recent episode of illness causing weight loss. *Overweight and obesity*, or high weight-for-height, results from an imbalance between energy consumed (too much) and energy expended (too little). Overweight and obesity are now problems in many countries. *Weight-for-age* is a composite index of height-for-age and weight-for-height. It includes both acute (wasting) and chronic (stunting) undernutrition and is an indicator of overall undernutrition.

The means of the Z-scores for height-for-age, weight-for-height, and weight-for-age are also calculated as summary statistics representing the nutritional status of children in a population. These mean scores describe the nutritional status of the entire population of children without the use of a cut-off point. A mean Z-score of less than 0 (that is, a negative mean value for stunting, wasting, or underweight) suggests a downward shift in the entire sample population's nutritional status relative to the reference population. The farther away mean Z-scores from 0, the higher the prevalence of undernutrition.

Height and weight measurements were obtained for 12,806 (unweighted) children under age 5 who were eligible to be measured in the 2018 NDHS subsample households at the time of the survey. The analysis of anthropometric indices (height-for-age, weight-for-height, and weight-for-age) included valid dates of birth and measures of both height and weight. Valid height data were available for 86% of children, and valid weight data were available for 87% of children.

Table 12 and Figure 6 shows nutritional status for children under age 5 according to the three anthropometric indices. Thirty-seven percent of children in Nigeria are stunted (below -2 SD), and 19% are severely stunted (below -3 SD). Stunting generally increases with age, peaking at 47% among children age 24-35 months. A higher proportion of children in rural areas (46%) than urban areas (27%) are stunted. Similarly, children in the North West (60%) are more likely to be stunted than other children. Stunting is relatively high among children in Kebbi (68%), Jigawa (68%), and Yobe (65%). Children of women with no education are more likely to be stunted than those whose mothers have been to school. Stunting is inversely related to wealth quintile; 58% of children in the lowest wealth quintile are stunted, as compared with 16% of children in the highest quintile.

Table 12 Nutritional status of children

Percentage of children under age 5 classified as malnourished according to three anthropometric indices of nutritional status: height-for-age, weight-for-height, and weight-for-age, according to background characteristics, Nigeria DHS 2018

Background characteristic	Height-for-age ¹			Weight-for-height			Weight-for-age				
	Percentage below -3 SD	Percentage below -2 SD	Mean Z-score (SD)	Percentage below -3 SD	Percentage below -2 SD	Percentage above +2 SD	Percentage below -3 SD	Percentage below -2 SD	Percentage above +2 SD	Mean Z-score (SD)	Number of children
	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Age in months											
<6	7.5	19.2	-0.8	2.9	8.3	5.6	8.3	18.6	3.1	-0.7	1,001
6-8	8.5	21.9	-0.9	3.0	14.0	2.3	9.3	19.5	1.0	-1.1	592
9-11	9.5	24.7	-1.1	4.7	15.0	3.1	10.5	20.8	1.6	-1.1	522
12-17	15.9	35.5	-1.5	4.7	14.6	2.0	12.0	27.0	0.6	-1.3	1,325
18-23	19.3	41.4	-1.8	2.2	8.4	1.3	8.5	24.1	0.3	-1.2	1,080
24-35	26.5	47.3	-1.9	1.7	5.3	1.7	8.6	25.9	0.1	-1.2	2,280
36-47	24.4	42.7	-1.8	0.6	2.9	1.7	8.2	22.6	0.2	-1.1	2,274
48-59	18.1	34.3	-1.4	0.6	3.8	1.2	4.1	19.3	0.3	-1.0	2,177
Sex											
Male	20.5	39.7	-1.6	2.4	8.2	2.4	8.9	24.2	0.7	-1.2	5,763
Female	17.6	34.2	-1.5	1.5	5.9	1.7	7.4	21.0	0.5	-1.1	5,488
Mother's interview status											
Interviewed	18.8	36.7	-1.5	2.0	7.2	2.0	8.0	22.5	0.6	-1.1	10,355
Not interviewed but in household	26.5	43.5	-1.8	0.7	3.1	4.2	7.5	25.7	0.4	-1.3	158
Not interviewed, not in household ³	21.8	39.7	-1.5	1.3	6.1	2.0	9.7	24.0	0.5	-1.1	739
Residence											
Urban	10.8	26.5	-1.2	1.4	5.4	1.9	4.1	15.5	0.7	-0.8	5,105
Rural	26.1	45.8	-1.9	2.4	8.4	2.1	11.4	28.7	0.5	-1.3	6,145
Zone											
North Central	11.4	28.7	-1.2	2.2	5.7	2.2	4.3	15.0	0.5	-0.8	1,622
North East	31.3	51.5	-2.0	3.0	10.1	3.0	12.8	32.8	0.8	-1.5	1,661
North West	36.6	60.1	-2.4	2.9	10.1	2.1	16.3	38.2	0.3	-1.7	3,012
South East	6.1	18.1	-0.8	0.9	4.7	2.2	2.3	10.6	1.0	-0.6	1,541
South South	5.0	19.5	-0.9	0.6	4.1	1.9	1.9	10.2	1.0	-0.7	1,226
South West	9.1	24.2	-1.2	1.4	5.0	1.2	3.8	14.9	0.4	-0.9	2,189
State											
North Central	10.6	20.2	-0.8	0.6	2.8	1.0	4.0	12.8	1.7	-0.6	77
FCT-Abuja	6.8	20.6	-0.8	4.5	9.1	2.3	3.5	12.6	0.9	-0.6	395
Benue	8.4	20.9	-1.0	1.2	3.6	2.1	2.1	10.5	0.0	-0.7	146
Kogi	13.9	34.2	-1.4	1.0	7.9	2.5	3.7	19.4	0.6	-1.0	186
Kwara	13.8	31.2	-1.5	1.5	5.0	0.4	8.4	20.5	0.0	-1.1	164
Nasarawa	12.1	28.2	-1.3	1.9	5.0	1.8	4.6	14.8	0.2	-0.9	423
Niger	16.0	44.9	-1.6	1.3	2.4	4.5	3.8	15.5	0.4	-0.8	230
Plateau	16.3	39.2	-1.6	1.2	4.1	1.9	4.7	19.0	0.0	-1.1	259
Adamawa	36.8	58.4	-2.3	2.0	9.1	1.1	12.5	35.5	0.7	-1.6	357
Bauchi	28.7	48.1	-1.8	6.5	17.0	4.4	12.8	31.9	1.0	-1.4	342
Borno	31.9	51.2	-2.1	4.3	9.3	4.8	14.1	33.2	0.5	-1.5	185
Gombe	21.8	41.4	-1.8	0.9	5.8	4.0	6.4	23.7	0.5	-1.1	214
Taraba	47.2	65.2	-2.5	2.3	12.0	2.7	24.0	48.8	1.9	-1.9	304

Continued...

Table 12—Continued

Background characteristic	Height-for-age ¹			Weight-for-height			Weight-for-age				
	Percentage below -3 SD	Mean Z-score (SD)	Number of children	Percentage below -3 SD	Percentage above +2 SD	Mean Z-score (SD)	Number of children	Percentage below -2 SD	Percentage above +2 SD	Mean Z-score (SD)	Number of children
North West											
Jigawa	44.2	67.7	334	3.6	10.6	1.7	338	22.9	46.4	0.3	340
Kaduna	26.4	50.5	574	1.3	5.2	2.3	579	9.1	24.3	0.2	580
Kano	35.5	60.9	623	1.7	7.1	1.7	632	10.9	35.0	0.0	633
Katsina	41.5	62.9	630	2.1	11.9	4.0	648	18.9	42.1	0.5	650
Kebbi	43.2	67.9	281	5.0	13.5	0.0	278	22.7	50.8	0.2	280
Sokoto	41.2	60.3	216	7.9	20.5	1.5	213	24.1	48.1	0.8	218
Zamfara	30.1	55.4	298	3.8	10.6	1.0	302	17.0	35.7	1.0	310
South East											
Abia	6.8	22.0	176	2.4	9.5	2.1	177	4.0	14.9	1.7	177
Anambara	3.7	13.8	497	0.4	2.5	3.2	499	1.7	6.9	1.8	499
Ebonyi	10.4	25.0	360	0.8	4.7	1.0	360	2.7	15.5	0.5	360
Enugu	4.7	14.8	194	1.6	2.5	2.6	194	2.1	6.5	0.8	194
Imo	5.2	16.9	310	0.3	7.1	1.6	309	1.7	10.9	0.0	310
South South											
Akwia Ibom	4.6	19.5	226	0.5	4.1	2.2	226	1.3	9.0	0.3	226
Bayelsa	6.3	24.4	95	0.4	1.4	2.7	96	2.6	13.0	3.5	96
Cross River	5.8	23.0	117	0.7	5.2	1.4	116	4.4	12.2	0.0	117
Delta	8.1	22.9	219	0.8	2.1	3.3	217	2.4	13.5	1.5	219
Edo	4.7	15.9	144	1.8	3.5	1.4	144	3.0	11.1	1.1	144
Rivers	3.3	16.9	422	0.2	5.5	1.0	423	0.8	7.5	0.7	423
South West											
Ekiti	7.1	22.4	157	1.5	3.4	4.5	157	1.5	10.6	0.3	158
Lagos	6.0	17.3	666	2.2	6.6	1.1	664	3.9	13.6	0.4	666
Ogun	7.9	25.6	341	1.3	5.8	0.0	341	3.1	15.3	0.0	341
Ondo	6.9	20.4	172	0.0	3.3	0.5	171	2.1	11.9	0.2	172
Osun	7.9	22.3	297	0.9	4.8	1.0	298	5.1	13.2	0.6	298
Oyo	15.4	34.5	551	1.0	3.8	1.4	551	4.8	19.1	0.6	553
Mother's education⁴											
No education	34.7	57.1	3,766	3.3	10.3	2.0	3,808	15.5	37.7	0.6	3,835
Primary	18.3	37.7	1,678	1.5	5.8	2.1	1,689	5.9	19.5	0.5	1,692
Secondary	8.0	23.2	3,872	1.2	5.2	2.2	3,872	3.2	12.8	0.6	3,886
More than secondary	4.0	13.9	1,100	0.9	5.0	1.8	1,098	2.4	9.3	1.0	1,100
Wealth quintile											
Lowest	36.3	58.4	1,898	3.3	11.3	2.1	1,919	17.6	40.9	0.6	1,941
Second	30.3	51.4	2,134	2.7	8.3	2.3	2,150	11.8	31.3	0.4	2,160
Middle	17.2	37.9	2,356	1.7	7.1	1.8	2,372	7.0	21.2	0.7	2,377
Fourth	11.1	26.6	2,433	1.9	5.3	2.2	2,435	4.1	14.5	0.3	2,441
Highest	5.1	16.4	2,327	0.6	4.3	1.8	2,328	2.3	9.6	1.0	2,331
Total	19.1	37.0	11,149	2.0	7.1	2.0	11,203	8.1	22.7	0.6	11,251

Note: Each of the indices is expressed in standard deviation units (SD) from the median of the WHO Child Growth Standards.

¹ Recumbent length is measured for children under age 2; standing height is measured for all other children.

² Includes children who are below -3 standard deviations (SD) from the WHO Child Growth Standards population median

³ Includes children whose mothers are deceased

⁴ For women who are not interviewed, information is taken from the Household Questionnaire. Excludes children whose mothers are not listed in the Household Questionnaire.

Overall, 7% of children in Nigeria are wasted and 2% are severely wasted. Eight percent of children in rural areas are wasted, as compared with 5% in urban areas. Wasting is highest in Sokoto (21%), followed by Borno (17%). Overall, 2% of children under age 5 are overweight.

The results show that 23% of all children under age 5 are underweight and 8% are severely underweight. The proportion of children who are underweight is greater in rural areas (29%) than urban areas (16%). Children of women with no education are four times as likely to be underweight as children whose mothers have more than a secondary education. Underweight is inversely related to wealth; 41% of children in the lowest wealth quintile are underweight, as compared with 10% of children in the highest quintile.

3.10.4 Infant and Young Child Feeding Practices

Breastfeeding is sufficient and beneficial for infant nutrition in the first 6 months of life. Breastfeeding immediately after birth also helps the uterus contract, hence reducing the mother's postpartum blood loss. Giving any other foods and water (in addition to breast milk) before the child is age 6 months is discouraged because it may inhibit breastfeeding and expose the infant to illness. Infants older than age 6 months need other food and drink while they continue to breastfeed until age 2 or older; breast milk remains an important source of energy, protein, and other nutrients such as vitamin A and iron. The food given should include a variety of options such as peeled, cooked, and mashed vegetables; grains; fruit; some oil; and also meat, eggs, chicken, and dairy products to provide adequate nourishment (Pan American Health Organization 2002).

Table 13 Breastfeeding status by age

Percent distribution of youngest children under age 2 who are living with their mother by breastfeeding status and percentage currently breastfeeding, and percentage of all children under age 2 using a bottle with a nipple, according to age in months, Nigeria DHS 2018

Age in months	Breastfeeding status						Total	Percentage currently breastfeeding	Number of youngest children under age 2 living with their mother	Percentage using a bottle with a nipple	Number of all children under age 2
	Not breast-feeding	Exclusively breast-feeding	Breast-feeding and consuming plain water only	Breast-feeding and consuming non-milk liquids ¹	Breast-feeding and consuming other milk	Breast-feeding and consuming complementary foods					
0-1	1.5	38.9	44.3	3.5	3.0	8.9	100.0	98.5	1,122	11.6	1,141
2-3	3.5	29.1	41.1	4.7	3.3	18.3	100.0	96.5	993	14.7	1,006
4-5	1.4	17.9	32.6	5.1	4.9	38.1	100.0	98.6	1,104	18.6	1,123
6-8	3.0	4.8	13.8	4.8	1.7	72.0	100.0	97.0	1,650	16.9	1,672
9-11	4.4	0.9	4.8	2.2	1.1	86.4	100.0	95.6	1,457	17.8	1,482
12-17	23.3	0.2	2.6	0.8	0.3	72.7	100.0	76.7	3,435	10.4	3,526
18-23	61.9	0.2	1.2	0.5	0.1	36.2	100.0	38.1	2,426	5.6	2,617
0-3	2.4	34.3	42.8	4.0	3.1	13.3	100.0	97.6	2,115	13.1	2,147
0-5	2.1	28.7	39.3	4.4	3.8	21.8	100.0	97.9	3,219	15.0	3,270
6-9	3.1	4.1	12.1	4.2	1.5	75.0	100.0	96.9	2,167	17.3	2,197
12-15	17.1	0.1	2.9	0.8	0.4	78.8	100.0	82.9	2,317	10.7	2,379
12-23	39.3	0.2	2.0	0.7	0.2	57.6	100.0	60.7	5,860	8.3	6,143
20-23	72.2	0.1	0.6	0.2	0.1	26.9	100.0	27.8	1,411	4.5	1,568

Note: Breastfeeding status refers to a "24-hour" period (yesterday and last night). Children who are classified as breastfeeding and consuming plain water only consumed no liquid or solid supplements. The categories of not breastfeeding, exclusively breastfeeding, breastfeeding and consuming plain water, non-milk liquids, other milk, and complementary foods (solids and semisolids) are hierarchical and mutually exclusive, and their percentages add to 100%. Thus, children who receive breast milk and non-milk liquids and who do not receive other milk and who do not receive complementary foods are classified in the non-milk liquid category even though they may also get plain water. Any children who get complementary food are classified in that category as long as they are breastfeeding as well.

¹ Non-milk liquids include juice, juice drinks, clear broth, or other liquids.

The 2018 NDHS collected data on infant and young child feeding (IYCF) practices for all children born in the 2 years preceding the survey. Table 13 shows breastfeeding practices by child's age. Contrary to the recommendation that children under age 6 months be exclusively breastfed, only 29% of infants in this age group were found to be exclusively breastfed. However, this is an improvement from the 17% figure reported in 2013. In addition to breast milk, 39% of these young children consume plain water, 4% consume non-milk liquids, 4% consume other milk, and 22% consume complementary foods. Fifteen percent of infants under age 6 months are fed using a bottle with a nipple, a practice that is discouraged

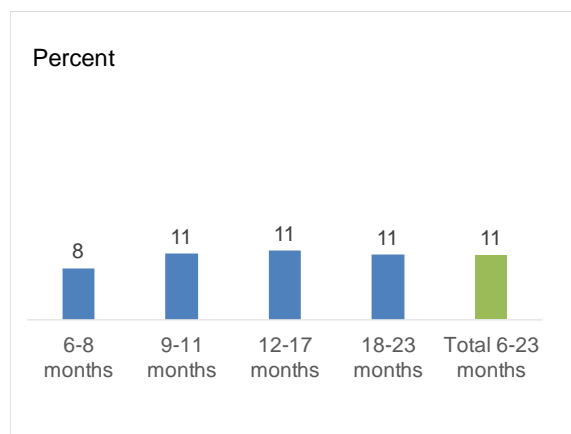
because of the risk of illness to the child. Seventy-two percent of children age 6-8 months receive timely complementary foods.

The minimum acceptable diet indicator is used to assess the proportion of children age 6-23 months who meet minimum standards with respect to IYCF practices. Specifically, children age 6-23 months who have a minimum acceptable diet meet all three IYCF criteria below:

- Breastfeeding, or not breastfeeding and receiving two or more feedings of commercial infant formula; fresh, tinned, or powdered animal milk; or yogurt.
- Fed with foods from five or more of the following groups: (a) breast milk; (b) grains, roots, and tubers, including porridge and fortified baby food from grains; (c) legumes and nuts; (d) dairy products (milk, yogurt, cheese); (e) eggs; (f) meat, poultry, fish, and shellfish (and organ meats); (g) vitamin A-rich fruits and vegetables (and red palm oil); and (h) other fruits and vegetables.
- Fed the minimum recommended number of times per day, according to their age and breastfeeding status:
 - For breastfed children, minimum meal frequency is receiving solid, semisolid, or soft food at least twice a day (for infants age 6-8 months) or at least three times a day (for children age 9-23 months).
 - For nonbreastfed children age 6-23 months, minimum meal frequency is receiving solid, semisolid, or soft food or milk feeds at least four times a day. At least one of the feeds must be a solid, semisolid, or soft food.

Figure 7 shows the percentage of children being fed the minimum acceptable diet, by age. Among children age 6-23 months, only 11% are fed in accordance with the criteria for a minimum acceptable diet.

Figure 7 Minimum Acceptable Diet according to Age, in Months



3.11 ANAEMIA PREVALENCE IN CHILDREN

Anaemia is a condition that is marked by low levels of haemoglobin in the blood. Iron is a key component of haemoglobin, and iron deficiency is estimated to be responsible for half of all anaemia globally. Other causes of anaemia include hookworm and other helminths, other nutritional deficiencies, chronic infections, and genetic conditions. Anaemia is a serious concern for children because it can impair cognitive development, stunt growth, and increase morbidity from infectious diseases.

The 2018 NDHS included direct measurement of haemoglobin levels using the HemoCue system. This system consists of a battery-operated photometer and a disposable microcuvette coated with a dried reagent that serves as the blood collection device. For the test, a drop of capillary blood taken from a child's fingertip or heel is drawn into the microcuvette. The blood in the microcuvette is analysed using the photometer, which displays the haemoglobin concentration. Haemoglobin levels were successfully measured for 97% of the children eligible for testing (data not shown). Results were given verbally and in writing. Parents of children with a haemoglobin level below 8 g/dl were instructed to take the child to a health facility for follow-up care. All households in which biomarker data were collected were given a brochure with results and an explanation of the causes and prevention of anaemia and malaria.

Table 14 presents anaemia prevalence among children age 6-59 months, by background characteristics. Haemoglobin levels for children were adjusted for altitude. Children with haemoglobin levels below 11.0 g/dl were defined as anaemic.

Table 14 Prevalence of anaemia in children

Percentage of children age 6-59 months classified as having anaemia, according to background characteristics, Nigeria DHS 2018

Background characteristic	Anaemia status by haemoglobin level				Number of children age 6-59 months
	Any anaemia (<11.0 g/dl)	Mild anaemia (10.0-10.9 g/dl)	Moderate anaemia (7.0-9.9 g/dl)	Severe anaemia (<7.0 g/dl)	
Age in months					
6-8	77.2	28.2	45.2	3.8	687
9-11	79.3	27.4	48.9	3.0	599
12-17	81.4	27.6	49.3	4.4	1,460
18-23	74.1	30.4	39.7	4.0	1,149
24-35	67.4	27.0	37.4	3.0	2,439
36-47	62.5	25.6	34.3	2.6	2,528
48-59	57.9	24.9	30.9	2.1	2,528
Sex					
Male	69.5	26.3	39.9	3.2	5,820
Female	66.2	27.2	36.2	2.9	5,572
Residence					
Urban	62.0	27.5	33.1	1.4	5,014
Rural	72.5	26.1	42.0	4.3	6,377
Zone					
North Central	65.9	28.3	35.3	2.3	1,620
North East	70.4	27.4	39.2	3.8	1,807
North West	69.9	23.9	41.6	4.4	3,216
South East	69.9	27.2	40.3	2.5	1,496
South South	73.2	31.5	39.0	2.7	1,192
South West	59.6	26.3	31.8	1.4	2,060
State					
North Central					
FCT-Abuja	58.8	23.9	32.7	2.3	80
Benue	62.0	34.3	26.7	1.0	377
Kogi	63.6	25.8	35.8	1.9	143
Kwara	69.4	33.1	34.7	1.6	189
Nasarawa	67.9	28.1	36.6	3.2	172
Niger	75.0	26.1	46.7	2.2	421
Plateau	55.3	22.3	28.6	4.3	238
North East					
Adamawa	56.0	19.9	33.0	3.1	252
Bauchi	75.7	29.1	40.6	6.0	400
Borno	71.2	29.4	38.8	3.0	385
Gombe	77.3	26.5	45.5	5.4	205
Taraba	70.9	29.4	38.4	3.1	219
Yobe	69.2	27.7	39.3	2.2	346
North West					
Jigawa	81.9	26.6	53.4	1.9	382
Kaduna	48.4	20.7	26.6	1.1	614
Kano	72.9	22.8	45.1	5.0	682
Katsina	64.8	27.3	32.6	4.9	687
Kebbi	80.8	24.9	50.8	5.1	285
Sokoto	79.6	21.0	53.4	5.2	227
Zamfara	83.6	22.9	50.8	9.9	339
South East					
Abia	67.1	34.9	30.0	2.2	173
Anambara	75.2	26.3	46.2	2.7	473
Ebonyi	79.3	23.4	53.1	2.8	356
Enugu	58.9	26.4	29.8	2.7	205
Imo	59.2	29.2	28.3	1.7	289
South South					
Akwa Ibom	74.7	29.4	39.5	5.8	216
Bayelsa	67.4	30.0	33.8	3.7	98
Cross River	69.8	30.2	38.0	1.6	105
Delta	69.8	28.7	38.0	3.1	222
Edo	65.9	28.0	36.6	1.3	139
Rivers	78.9	35.9	41.5	1.5	412

Continued..

Table 14—Continued

Background characteristic	Anaemia status by haemoglobin level				Number of children age 6-59 months
	Any anaemia (<11.0 g/dl)	Mild anaemia (10.0-10.9 g/dl)	Moderate anaemia (7.0-9.9 g/dl)	Severe anaemia (<7.0 g/dl)	
South West					
Ekiti	71.9	28.7	42.1	1.2	145
Lagos	51.8	29.2	22.2	0.4	613
Ogun	59.5	22.8	34.4	2.2	330
Ondo	64.2	22.9	38.9	2.4	159
Osun	57.6	25.1	31.0	1.5	286
Oyo	65.0	26.3	36.8	1.9	528
Wealth quintile					
Lowest	80.1	25.5	48.6	6.0	2,120
Second	75.0	25.6	45.2	4.2	2,235
Middle	66.5	25.8	38.4	2.3	2,412
Fourth	65.3	27.0	35.9	2.3	2,388
Highest	53.3	29.8	23.0	0.6	2,235
Total	67.9	26.7	38.1	3.0	11,391

Notes: Table is based on children who stayed in the household on the night before the interview and who were tested for anaemia. Prevalence of anaemia, based on haemoglobin levels, is adjusted for altitude using formulas in CDC 1998. Haemoglobin is in grams per decilitre (g/dl).

Overall, 68% of children suffered from some degree of anaemia: 27% were classified as mildly anaemic, 38% were moderately anaemic, and 3% were severely anaemic. The prevalence of anaemia decreases with age, from a high of 81% among children age 12-17 months to a low of 58% among children age 48-59 months. Anaemia prevalence is higher among children in rural areas than among those in urban areas (73% and 62%, respectively). Anaemia prevalence varies by state, from a low of 48% in Kaduna to a high of 84% in Zamfara.

3.12 ANAEMIA PREVALENCE IN WOMEN

The 2018 NDHS also included measurement of haemoglobin levels among women age 15-49. Haemoglobin levels among women were measured using procedures similar to those used for children, except that capillary blood was collected exclusively from a finger prick. Haemoglobin levels were successfully measured for 97% of the women eligible for testing (data not shown). Results were given verbally and in writing. Nonpregnant women and pregnant women were referred for follow-up care if their haemoglobin levels were below 8 g/dl and 7 g/dl, respectively. All households in which anthropometry and anaemia testing were conducted received a brochure explaining the causes and prevention of anaemia.

Table 15 presents anaemia prevalence among women age 15-49 by background characteristics. Haemoglobin levels for women were adjusted for altitude and smoking status. Pregnant women with haemoglobin levels below 11.0 g/dl and nonpregnant women with haemoglobin levels below 12.0 g/dl were defined as anaemic.

Table 15 Prevalence of anaemia in women

Percentage of women age 15-49 classified as having any, mild, moderate, and severe anaemia, according to background characteristics, Nigeria DHS 2018

Background characteristic	Anaemia status by haemoglobin level					Number of women
		Any anaemia	Mild anaemia	Moderate anaemia	Severe anaemia	
	Non-pregnant Pregnant	<12.0 g/dl <11.0 g/dl	11.0-11.9 g/dl 10.0-10.9 g/dl	8.0-10.9 g/dl 7.0-9.9 g/dl	<8.0 g/dl <7.0 g/dl	
Age						
15-19		60.5	48.2	11.6	0.7	2,711
20-29		56.0	41.3	13.9	0.8	4,941
30-39		58.4	43.7	13.7	1.0	4,402
40-49		57.5	44.8	12.2	0.5	2,563
Number of living children						
0		56.8	45.8	10.4	0.6	3,636
1		57.7	42.4	14.3	1.0	1,749
2-3		55.8	42.1	12.9	0.8	3,417
4-5		57.3	41.9	14.5	0.9	2,725
6+		61.8	46.4	14.6	0.8	3,090
Maternity status						
Pregnant		61.1	25.8	33.0	2.3	1,542
Breastfeeding		59.7	47.1	11.6	0.9	3,749
Neither		56.5	45.6	10.4	0.5	9,327
Residence						
Urban		53.6	41.9	11.1	0.6	6,786
Rural		61.5	45.7	14.8	0.9	7,831
Zone						
North Central		55.2	42.7	11.9	0.6	2,093
North East		58.3	44.4	13.0	0.9	2,222
North West		58.8	42.9	14.7	1.2	3,906
South East		66.0	47.3	18.0	0.7	1,823
South South		60.1	44.9	14.3	0.9	1,813
South West		51.1	43.1	7.8	0.2	2,759
State						
North Central						
FCT-Abuja		50.3	41.6	8.1	0.5	112
Benue		48.8	41.4	7.2	0.2	496
Kogi		58.2	48.4	9.9	0.0	224
Kwara		54.9	41.4	12.5	0.9	256
Nasarawa		65.1	46.3	17.7	1.1	236
Niger		64.2	45.2	18.8	0.2	468
Plateau		43.7	35.5	6.9	1.4	301
North East						
Adamawa		35.9	28.3	7.1	0.5	291
Bauchi		68.6	47.5	19.5	1.6	443
Borno		53.9	43.8	8.8	1.2	516
Gombe		63.6	47.8	15.0	0.8	240
Taraba		54.0	44.1	9.4	0.6	294
Yobe		67.8	50.8	16.7	0.2	438
North West						
Jigawa		65.4	41.2	23.0	1.3	447
Kaduna		44.0	34.4	8.1	1.4	850
Kano		46.6	32.6	11.2	2.8	775
Katsina		71.2	58.2	13.0	0.0	780
Kebbi		60.4	41.3	18.3	0.8	380
Sokoto		73.7	49.3	23.4	1.0	247
Zamfara		71.3	49.6	20.7	1.0	428
South East						
Abia		58.5	42.5	15.2	0.8	235
Anambara		70.2	50.6	18.9	0.6	517
Ebonyi		71.7	43.4	27.4	0.8	350
Enugu		60.2	49.8	10.1	0.4	324
Imo		64.6	47.1	16.6	0.9	396
South South						
Akwa Ibom		57.7	43.6	13.1	1.1	339
Bayelsa		58.4	42.0	15.6	0.8	117
Cross River		46.1	38.9	7.0	0.2	227
Delta		64.1	47.6	15.5	1.0	312
Edo		55.2	41.8	13.4	0.0	181
Rivers		66.1	47.9	17.0	1.2	638
South West						
Ekiti		50.5	40.7	9.5	0.3	198
Lagos		49.5	43.0	6.6	0.0	1,002
Ogun		49.0	41.8	6.6	0.7	363
Ondo		55.2	45.7	9.3	0.2	253
Osun		57.2	46.7	10.0	0.4	358
Oyo		49.7	41.7	7.9	0.1	585

Continued...

Table 15—Continued

Background characteristic	Anaemia status by haemoglobin level				Number of women	
		Any	Mild	Moderate		Severe
	Non-pregnant	<12.0 g/dl	11.0-11.9 g/dl	8.0-10.9 g/dl		<8.0 g/dl
	Pregnant	<11.0 g/dl	10.0-10.9 g/dl	7.0-9.9 g/dl	<7.0 g/dl	
Education						
	No education	63.9	46.2	16.5	1.2	4,823
	Primary	58.6	43.5	14.4	0.7	2,228
	Secondary	55.3	43.0	11.7	0.6	6,053
	More than secondary	47.2	40.9	6.0	0.3	1,513
Wealth quintile						
	Lowest	65.5	46.7	17.8	1.0	2,354
	Second	61.8	46.0	15.0	0.8	2,752
	Middle	59.1	44.7	13.5	0.9	2,979
	Fourth	55.4	42.1	12.7	0.6	3,223
	Highest	50.1	41.3	8.2	0.6	3,310
	Total	57.8	43.9	13.1	0.8	14,617

Note: Prevalence is adjusted for altitude and for smoking status, if known, using formulas in CDC 1998.

Fifty-eight percent of women age 15-49 are anaemic. The majority of these women are mildly anaemic (44%); 13% are moderately anaemic, and 1% are severely anaemic. Pregnant women (61%) and breastfeeding women (60%) are more likely to be anaemic. Women in rural areas are more likely to be anaemic than women in urban areas (62% and 54%, respectively). Anaemia levels vary by state; for example, 74% of women residing in Sokoto are anaemic, as compared with only 36% of women in Adamawa. Women in the lowest wealth quintile are more likely to be anaemic than those in the highest quintile (66% versus 50%).

3.13 OWNERSHIP AND USE OF MOSQUITO NETS

3.13.1 Ownership of Mosquito Nets

The use of insecticide-treated mosquito nets (ITNs) is a primary health intervention designed to reduce malaria transmission in Nigeria. An ITN is defined as a factory-treated net that does not require any further treatment. In the 2008 NDHS, 2010 NMIS, 2013 NDHS, and 2015 NMIS, the definition of an ITN included nets that had been soaked with insecticides within the past 12 months. In the most recent questionnaires, The DHS Program dropped questions on retreatment of nets. This was done because bed nets that require annual retreatment and the products used for retreatment are no longer distributed, and the distinction between ITNs and long-lasting insecticide-treated nets (LLINs) is no longer meaningful. What are defined as ITNs in the 2018 NDHS were previously known as LLINs in the 2008 NDHS, 2010 NMIS, 2013 NDHS, and 2015 NMIS.

All households in the 2018 NDHS were asked if they owned mosquito nets and, if so, what type and how many. Table 16 presents the percentage of households with at least one ITN, the average number of nets per household, and the percentage of households with at least one ITN for each two persons who stayed in the household the previous night, by background characteristics. About six in ten households (60%) have at least one ITN. On average, there is one ITN per household.

Table 16 Household possession of insecticide-treated nets

Percentage of households with at least one insecticide-treated net (ITN), average number of ITNs per household, and percentage of households with at least one ITN per two persons who stayed in the household last night, according to background characteristics, Nigeria DHS 2018

Background characteristic	Percentage of households with at least one ITN ¹	Average number of ITNs ¹ per household	Number of households	Percentage of households with at least one ITN ¹ for every two persons who stayed in the household last night ²	Number of households with at least one person who stayed in the household last night
Residence					
Urban	52.6	1.0	18,940	25.5	18,916
Rural	66.9	1.5	21,487	33.0	21,452
Zone					
North Central	58.2	1.1	5,697	28.3	5,692
North East	67.1	1.5	5,694	28.5	5,692
North West	86.1	2.2	9,841	42.0	9,829
South East	47.9	1.0	4,752	24.8	4,736
South South	45.2	0.8	5,729	23.8	5,711
South West	44.3	0.7	8,714	23.0	8,707
State					
North Central					
FCT-Abuja	39.5	0.6	287	14.1	287
Benue	63.7	1.1	1,230	28.0	1,229
Kogi	68.4	1.3	707	44.0	706
Kwara	65.5	1.4	771	37.5	771
Nasarawa	76.6	1.8	591	45.2	591
Niger	46.8	0.8	1,229	16.4	1,229
Plateau	45.4	0.8	883	18.0	880
North East					
Adamawa	47.7	1.3	908	32.7	908
Bauchi	84.3	1.9	1,146	31.0	1,146
Borno	67.3	1.2	1,271	30.0	1,271
Gombe	74.2	1.8	550	28.5	550
Taraba	40.1	0.7	720	13.1	717
Yobe	79.2	1.8	1,100	31.0	1,100
North West					
Jigawa	90.0	2.9	1,134	62.8	1,133
Kaduna	79.3	1.5	1,950	28.4	1,950
Kano	85.0	2.2	2,153	40.5	2,150
Katsina	91.7	2.7	1,820	51.6	1,820
Kebbi	98.1	2.6	910	51.9	910
Sokoto	84.1	1.8	843	38.5	836
Zamfara	77.9	1.6	1,030	25.4	1,030
South East					
Abia	45.4	0.8	664	22.9	661
Anambara	32.8	0.6	1,391	13.5	1,390
Ebonyi	75.7	1.7	852	38.4	850
Enugu	38.2	0.6	870	17.6	870
Imo	55.4	1.4	974	36.9	965
South South					
Akwa Ibom	55.8	1.2	1,048	32.9	1,045
Bayelsa	47.2	0.8	404	26.7	404
Cross River	53.3	0.8	739	28.8	729
Delta	38.5	0.6	1,271	17.6	1,271
Edo	56.6	1.2	710	37.2	710
Rivers	33.8	0.5	1,556	13.7	1,552
South West					
Ekiti	45.3	0.7	629	23.1	628
Lagos	29.3	0.4	2,971	9.2	2,970
Ogun	47.8	0.9	1,251	29.6	1,248
Ondo	78.8	1.6	844	53.9	843
Osun	42.1	0.6	1,219	16.9	1,217
Oyo	51.4	0.8	1,801	30.6	1,801
Wealth quintile					
Lowest	72.4	1.7	6,912	33.7	6,905
Second	69.6	1.5	7,499	34.4	7,489
Middle	61.7	1.3	8,273	30.8	8,253
Fourth	54.0	1.1	8,676	26.7	8,671
Highest	47.7	0.9	9,068	23.6	9,050
Total	60.2	1.3	40,427	29.5	40,369

¹ An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2015 NMIS, 2013 NDHS, 2010 NMIS, and 2008 NDHS, this was known as a long-lasting insecticidal net (LLIN).

² De facto household members

Rural households are more likely to own at least one ITN than urban households (67% versus 53%).

Households in the North West more often reported having an ITN than other households and have at least two ITNs per household on average. Households in the lowest wealth quintile more often reported having an ITN than those in the highest wealth quintile (72% versus 48%).

Thirty percent of the households in Nigeria have at least one ITN for every two persons who stayed in the household the night before the survey. The percentage of households with at least one ITN

for every two persons who stayed in the household the night before the survey is higher in rural areas (33%) than in urban areas (26%). Households in the North West are more likely than those in other zones to have at least one ITN for every two persons who stayed in the household the night before the survey.

Figure 8 shows the percentage of the de facto population with access to an ITN. Overall, 47% of the household population has access to an ITN, which means that all de facto household members could sleep under an ITN if each ITN in the household were used by up to two people. Those living in rural areas (52%), those living in the North West (64%), and those in the lowest wealth quintile (54%) are most likely to have access to an ITN.

3.13.2 Use of ITNs by Children and Pregnant Women

Community-level protection against malaria helps reduce the spread of the disease and offers an additional layer of protection against malaria for those who are most vulnerable: children under age 5 and pregnant women. This section describes use of mosquito nets among children and pregnant women.

Table 17 shows that 52% of children under age 5 slept under an ITN the night before the survey. Fifty-six percent of children in rural areas slept under an ITN, as compared with 45% of those in urban areas. Among households with at least one ITN, about three quarters of children (74%) slept under an ITN the night before the survey.

Figure 8 Percentage of the De Facto Population with Access to an ITN in the Household

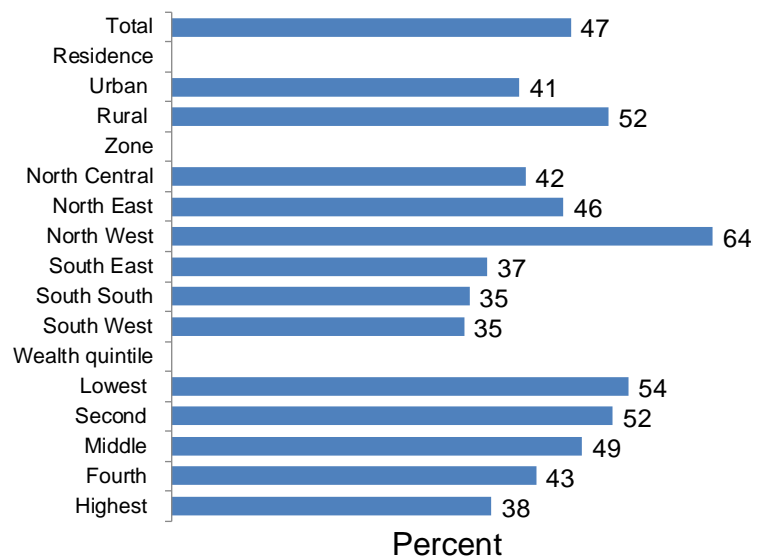


Table 17 Use of insecticide-treated nets by children and pregnant women

Percentage of children under age 5 who, the night before the survey, slept under an insecticide-treated net (ITN); and among children under age 5 in households with at least one ITN, percentage who slept under an ITN the night before the survey; percentage of pregnant women age 15-49 who, the night before the survey, slept under an ITN; and among pregnant women age 15-49 in households with at least one ITN, percentage who slept under an ITN the night before the survey, according to background characteristics, Nigeria DHS 2018

Background characteristic	Children under age 5 in all households		Children under age 5 in households with at least one ITN ¹		Pregnant women age 15-49 in all households		Pregnant women age 15-49 in households with at least one ITN ¹	
	Percentage who slept under an ITN ¹ last night	Number of children	Percentage who slept under an ITN ¹ last night	Number of children	Percentage who slept under an ITN ¹ last night	Number of pregnant women	Percentage who slept under an ITN ¹ last night	Number of pregnant women
Residence								
Urban	44.6	12,901	71.3	8,077	44.8	1,538	72.9	946
Rural	56.3	19,755	75.7	14,708	64.5	2,771	85.6	2,090
Zone								
North Central	47.3	4,461	75.9	2,778	48.9	635	78.8	394
North East	47.2	6,004	69.3	4,094	57.6	811	81.4	574
North West	71.6	11,416	80.2	10,181	77.6	1,690	89.0	1,474
South East	36.5	3,419	66.2	1,886	38.5	391	72.3	208
South South	33.2	2,962	62.7	1,568	29.2	320	61.2	153
South West	35.0	4,395	67.6	2,278	31.1	462	61.6	233
State								
North Central								
FCT-Abuja	35.4	226	68.3	117	34.7	20	(76.8)	9
Benue	64.5	942	92.7	655	67.2	137	87.7	105
Kogi	53.1	388	69.5	296	50.5	72	72.5	50
Kwara	34.1	535	51.0	358	37.7	70	63.3	42
Nasarawa	57.4	501	71.1	404	59.6	54	71.7	45
Niger	37.3	1,234	74.9	615	40.8	171	75.9	92
Plateau	44.9	635	85.8	332	42.5	111	91.5	51
North East								
Adamawa	46.8	771	90.0	401	37.8	91	(89.4)	38
Bauchi	52.7	1,400	60.8	1,215	71.0	213	80.1	189
Borno	48.4	1,160	76.9	730	54.5	179	82.7	118
Gombe	37.1	685	50.7	501	62.0	82	80.6	63
Taraba	24.2	754	59.8	305	30.4	95	68.3	42
Yobe	59.9	1,234	78.4	943	68.8	151	84.7	123
North West								
Jigawa	82.6	1,361	90.5	1,242	86.4	214	97.1	191
Kaduna	67.1	2,117	78.7	1,804	62.4	287	74.1	241
Kano	74.3	2,537	82.7	2,277	78.7	415	92.7	352
Katsina	72.5	2,231	77.8	2,079	76.6	287	84.5	260
Kebbi	93.5	1,044	94.8	1,030	96.2	168	97.5	166
Sokoto	51.8	896	61.5	755	76.2	133	84.4	120
Zamfara	55.7	1,230	68.9	994	74.2	186	96.1	143
South East								
Abia	23.9	431	48.1	215	25.2	38	(51.4)	18
Anambara	25.4	1,026	59.7	436	28.0	123	(79.8)	43
Ebonyi	67.9	827	89.4	628	72.9	92	91.6	73
Enugu	26.7	466	56.9	219	36.0	59	(69.8)	30
Imo	29.7	669	51.2	388	23.2	80	43.2	43
South South								
Akwa Ibom	36.5	515	52.5	358	25.9	57	(42.2)	35
Bayelsa	32.7	227	69.3	107	29.7	25	(64.6)	11
Cross River	40.5	307	70.4	176	(34.3)	24	*	10
Delta	36.5	596	73.6	295	37.6	84	(72.5)	43
Edo	31.4	416	53.6	244	(24.6)	44	(46.8)	23
Rivers	27.7	901	64.3	388	24.0	86	(69.5)	30
South West								
Ekiti	26.4	307	53.6	151	(25.3)	31	*	15
Lagos	21.3	1,499	56.1	568	15.4	169	(45.9)	57
Ogun	49.3	608	78.6	382	55.7	59	(84.9)	39
Ondo	58.4	401	69.1	339	50.2	53	68.2	39
Osun	32.4	572	63.0	294	(37.1)	52	(61.1)	31
Oyo	41.7	1,007	77.3	544	31.6	97	(58.9)	52
Wealth quintile								
Lowest	59.2	7,066	77.8	5,379	66.8	1,017	88.5	768
Second	58.4	7,211	76.9	5,479	69.8	1,049	88.1	831
Middle	53.1	6,720	75.0	4,759	58.4	886	81.9	632
Fourth	44.6	6,092	69.7	3,902	42.5	721	68.0	450
Highest	39.6	5,567	67.5	3,265	38.0	637	68.4	354
Total	51.7	32,657	74.1	22,785	57.5	4,309	81.6	3,035

Note: Table is based on children and pregnant women who stayed in the household the night before the interview. Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

¹ An insecticide-treated net (ITN) is a factory-treated net that does not require any further treatment. In the 2015 NMIS, 2013 NDHS, 2010 NMIS, and 2008 NDHS, this was known as a long-lasting insecticidal net (LLIN).

Table 17 also shows that 58% of pregnant women slept under an ITN the night before the survey. Among households with at least one ITN, more than 8 in 10 pregnant women (82%) slept under an ITN the night before the survey. Pregnant women in rural households with at least one ITN are more likely to sleep under an ITN than those in urban areas (86% and 73%, respectively).

3.13.3 Intermittent Preventive Treatment of Malaria in Pregnancy

In areas of high malaria transmission, by the time an individual reaches adulthood, she or he has acquired immunity that protects against severe disease. However, pregnant women—especially those pregnant for the first time—frequently regain their susceptibility to malaria. Although malaria in pregnant women may not manifest itself as either febrile illness or severe disease, it is frequently the cause of mild to severe anaemia. In addition, malaria during pregnancy can interfere with the maternal-foetal exchange that occurs at the placenta, leading to delivery of low birth weight infants.

In the 2018 NDHS, women who had a live birth in the 5 years preceding the survey were asked if they took any sulfadoxine-pyrimethamine (SP)/Fansidar during the pregnancy leading to their most recent birth and, if so, how many times they took SP/Fansidar. Women were also asked where they obtained SP/Fansidar.

Table 18 Use of intermittent preventive treatment (IPTp) by women during pregnancy

Percentage of women age 15-49 with a live birth in the 2 years preceding the survey who, during the pregnancy that resulted in the last live birth, received one or more doses of SP/Fansidar, received two or more doses of SP/Fansidar, and received three or more doses of SP/Fansidar, according to background characteristics, Nigeria DHS 2018

Background characteristic	Percentage who received one or more doses of SP/Fansidar	Percentage who received two or more doses of SP/Fansidar	Percentage who received three or more doses of SP/Fansidar	Number of women with a live birth in the 2 years preceding the survey
Residence				
Urban	72.6	47.3	20.7	4,979
Rural	58.0	36.1	14.0	7,956
Zone				
North Central	56.4	35.0	14.8	1,787
North East	65.0	40.7	14.0	2,350
North West	58.4	34.1	10.8	4,649
South East	78.9	62.5	37.8	1,304
South South	73.9	50.0	23.7	1,160
South West	64.6	39.3	16.6	1,685
State				
North Central				
FCT-Abuja	75.4	42.7	27.0	87
Benue	66.7	47.5	17.6	370
Kogi	77.7	47.5	29.8	167
Kwara	57.0	33.5	14.6	211
Nasarawa	64.3	53.2	14.9	189
Niger	44.2	19.5	4.9	535
Plateau	38.6	25.3	17.6	228
North East				
Adamawa	72.8	37.6	4.4	326
Bauchi	59.5	40.1	14.6	590
Borno	67.2	41.2	9.1	418
Gombe	65.0	40.0	14.8	277
Taraba	55.0	26.8	7.4	299
Yobe	71.0	53.1	29.0	441
North West				
Jigawa	66.9	52.5	22.9	552
Kaduna	59.1	33.1	9.2	885
Kano	74.5	34.0	7.2	1,001
Katsina	45.0	27.3	6.3	876
Kebbi	62.2	33.9	5.4	451
Sokoto	44.1	37.1	22.5	362
Zamfara	46.9	26.3	11.9	521
South East				
Abia	90.6	85.3	73.7	156
Anambara	81.6	65.9	43.4	430
Ebonyi	67.6	47.0	24.2	298
Enugu	70.3	53.9	23.9	183
Imo	87.0	67.5	32.0	237
South South				
Akwa Ibom	83.4	44.5	16.5	216
Bayelsa	44.2	14.2	7.2	87
Cross River	83.2	75.1	32.6	117
Delta	64.9	40.1	15.1	239
Edo	80.7	67.1	47.1	150
Rivers	75.4	53.4	25.2	350
South West				
Ekiti	71.4	48.2	24.0	128
Lagos	69.0	44.7	20.0	599
Ogun	84.5	37.1	21.2	220
Ondo	67.8	52.2	26.7	157
Osun	58.3	42.5	11.7	198
Oyo	46.1	22.0	4.4	383
Wealth quintile				
Lowest	47.9	29.4	12.1	2,775
Second	54.1	32.7	10.9	2,955
Middle	68.0	41.9	15.9	2,666
Fourth	73.3	49.7	22.8	2,416
Highest	80.7	53.0	24.1	2,123
Total	63.6	40.4	16.6	12,935

Table 18 shows that 64% of women with a live birth in the 2 years preceding the survey reported taking one or more doses of SP/Fansidar; 40% reported taking two or more doses, and 17% reported taking three or more doses. Women in urban areas are more likely to take SP/Fansidar during pregnancy than those in

rural areas. There are variations across zones; 79% of women in the South East received one or more doses of SP/Fansidar, as compared with 56% of women in the North Central.

3.13.4 Prevalence, Diagnosis, and Prompt Treatment of Fever among Children

In moderately to highly endemic areas of malaria, acute clinical disease is almost always confined to young children who suffer high parasite densities. If untreated, this condition can progress very rapidly to severe malaria, which can lead to death. The diagnosis of malaria is based on clinical criteria and supplemented by the detection of parasites in the blood (parasitological or confirmatory diagnosis). Fever is a major manifestation of malaria in young children, although it also accompanies other illnesses. In Nigeria, artemisinin-based combination therapy (ACT) is the recommended first-line treatment for uncomplicated malaria.

In the 2018 NDHS, for each child under age 5, mothers were asked if the child had experienced an episode of fever in the 2 weeks preceding the survey and, if so, whether treatment and advice were sought. Table 19 shows the percentage of children under age 5 who had a fever in the 2 weeks preceding the survey. Also shown, among children with a fever, are the percentage for whom advice or treatment was sought, the percentage who had a drop of blood taken from a finger or heel prick (presumably for a malaria test), and, among those who took any antimalarial drug, the percentage who took any ACT.

Table 19 Prevalence, diagnosis, and prompt treatment of children with fever

Percentage of children under age 5 with a fever in the 2 weeks preceding the survey; among children under age 5 with fever, percentage for whom advice or treatment was sought and percentage who had blood taken from a finger or heel; and among children under age 5 with fever who took any antimalarial drug, percentage who took any artemisinin-based combination therapy (ACT), according to background characteristics, Nigeria DHS 2018

Background characteristic	Children under age 5		Children under age 5 with fever			Children under age 5 with fever who took any antimalarial drug	
	Percentage with a fever in the 2 weeks preceding the survey	Number of children	Percentage for whom advice or treatment was sought ¹	Percentage who had blood taken from a finger or heel for testing	Number of children	Percentage who took any ACT	Number of children
Residence							
Urban	18.6	12,215	77.3	16.2	2,269	34.0	1,951
Rural	27.8	18,666	67.1	12.7	5,197	25.1	4,088
Zone							
North Central	17.7	4,255	56.8	14.1	754	30.8	520
North East	35.0	5,598	68.0	13.1	1,959	17.6	1,569
North West	27.9	10,883	73.0	13.0	3,039	27.4	2,552
South East	20.1	3,205	69.5	14.1	643	53.2	556
South South	25.5	2,787	79.5	12.4	710	30.6	564
South West	8.7	4,153	69.9	25.5	360	30.7	278
State							
North Central							
FCT-Abuja	23.3	212	79.2	14.3	49	9.0	34
Benue	12.2	909	88.9	12.4	111	15.4	96
Kogi	11.5	396	49.4	23.7	46	(18.6)	30
Kwara	11.4	497	51.4	10.4	57	29.8	41
Nasarawa	10.3	471	47.6	38.0	48	(0.0)	24
Niger	28.0	1,207	48.7	8.6	338	46.4	243
Plateau	18.6	565	49.0	20.7	105	23.1	53
North East							
Adamawa	27.9	714	45.9	6.5	199	45.3	119
Bauchi	49.5	1,317	68.3	16.8	652	17.0	501
Borno	16.0	1,140	74.8	11.4	182	30.6	141
Gombe	37.0	629	76.1	8.3	232	14.6	195
Taraba	28.8	682	52.2	5.5	196	21.9	173
Yobe	44.5	1,118	76.4	16.7	497	6.1	439
North West							
Jigawa	33.8	1,277	78.0	17.0	432	36.0	344
Kaduna	25.8	2,039	60.8	5.9	527	1.7	454
Kano	26.4	2,416	81.6	16.4	638	31.9	562
Katsina	28.6	2,141	78.8	14.7	612	25.9	544
Kebbi	38.9	1,005	73.1	20.8	391	64.7	346
Sokoto	32.7	852	73.1	2.8	278	7.9	226
Zamfara	13.9	1,154	41.9	4.0	160	6.9	76
South East							
Abia	7.7	395	85.0	15.8	30	(10.3)	25
Anambara	13.7	999	93.5	7.4	137	65.1	123
Ebonyi	32.4	759	63.3	17.9	246	53.3	206
Enugu	14.0	455	81.6	10.3	64	53.8	50
Imo	27.9	598	51.3	15.0	167	50.3	152
South South							
Akwa Ibom	37.6	480	68.7	18.0	180	36.2	143
Bayelsa	10.0	210	71.8	3.0	21	41.5	18
Cross River	16.8	300	83.5	19.3	50	31.4	42
Delta	5.2	567	*	*	30	*	23
Edo	18.9	382	75.8	16.5	72	14.8	56
Rivers	42.0	848	87.3	8.7	356	32.0	283
South West							
Ekiti	17.9	296	59.7	28.7	53	16.7	45
Lagos	6.7	1,449	71.5	31.5	97	(31.3)	77
Ogun	4.9	574	*	*	28	*	22
Ondo	12.7	395	61.0	32.1	50	(44.9)	33
Osun	13.9	515	63.4	25.1	72	(40.3)	55
Oyo	6.5	925	(80.8)	(16.1)	60	(11.5)	45
Wealth quintile							
Lowest	32.5	6,625	62.9	10.6	2,153	22.6	1,598
Second	28.3	6,816	68.2	12.4	1,930	25.8	1,575
Middle	23.7	6,364	70.9	14.6	1,510	29.0	1,248
Fourth	19.4	5,816	77.7	18.1	1,128	31.2	980
Highest	14.2	5,260	83.9	18.4	745	39.7	638
Total	24.2	30,881	70.2	13.8	7,466	28.0	6,039

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

¹ Includes advice or treatment from the following sources: public sector, private medical sector, shop, market, itinerant drug seller, or community-oriented resource person. Excludes advice or treatment from a traditional practitioner.

Almost a quarter of children under age 5 (24%) had a fever during the 2 weeks preceding the survey. The prevalence of fever is higher among children in rural areas than children in urban areas (28% and 19%, respectively). Advice or treatment was sought for 70% of children with a fever, and 14% had blood taken from a finger or heel for testing. Advice or treatment for fever is more likely to be sought for children in urban areas than children in rural areas (77% and 67%, respectively). Nearly 3 in 10 (28%) children with a fever who took any antimalarial drug took ACT.

3.14 HIV/AIDS AWARENESS, KNOWLEDGE, AND BEHAVIOUR

3.14.1 Knowledge of HIV Prevention

The 2018 NDHS included a series of questions asked of both women and men that addressed respondents' knowledge of HIV prevention, awareness of modes of HIV transmission, and behaviours that can prevent the spread of HIV.

Ninety-four percent of women and 95% of men have heard of AIDS (data not shown). Table 20 shows that 73% of women and 78% of men age 15-49 know that consistent use of condoms is a means of preventing the spread of HIV. Eighty-eight percent of women and 86% of men know that limiting sexual intercourse to one faithful, uninfected partner can reduce the chance of contracting HIV. Finally, 71% of women and 74% of men know that both using condoms and limiting sexual intercourse to one uninfected partner are means of preventing HIV.

Table 20 Knowledge of HIV prevention methods

Percentage of women and men age 15-49 who, in response to prompted questions, say that people can reduce the risk of getting HIV by using condoms every time they have sexual intercourse and by having one sex partner who is not infected and has no other partners, according to background characteristics, Nigeria DHS 2018

	Percentage of women who say HIV can be prevented by:				Percentage of men who say HIV can be prevented by:			
	Using condoms ¹	Limiting sexual intercourse to one uninfected partner ²	Using condoms and limiting sexual intercourse to one uninfected partner ^{1,2}	Number of women	Using condoms ¹	Limiting sexual intercourse to one uninfected partner ²	Using condoms and limiting sexual intercourse to one uninfected partner ^{1,2}	Number of men
Age								
15-24	69.3	85.6	66.8	15,284	71.1	78.0	65.9	3,888
15-19	64.6	82.3	61.9	8,448	66.2	73.0	60.2	2,415
20-24	75.1	89.8	72.7	6,835	79.1	86.2	75.2	1,472
25-29	75.3	89.4	73.4	7,255	81.1	88.8	77.6	1,599
30-39	76.3	90.6	74.2	11,641	82.3	89.8	79.3	3,625
40-49	72.8	89.2	70.8	7,642	80.7	88.9	77.1	2,757
Residence								
Urban	79.0	90.7	76.7	19,163	82.7	88.9	79.2	5,512
Rural	67.8	86.3	65.6	22,658	74.1	82.7	69.8	6,356
Zone								
North Central	67.4	79.9	65.4	5,891	78.7	82.2	76.0	1,704
North East	63.1	89.1	61.6	6,636	63.3	74.4	57.9	1,936
North West	75.1	92.4	74.0	12,225	77.5	87.9	73.3	3,195
South East	78.4	94.6	77.0	4,963	90.2	95.0	87.9	1,355
South South	74.6	85.3	70.6	4,840	84.6	87.6	80.4	1,438
South West	77.7	85.4	73.6	7,266	79.8	87.5	75.5	2,240
State								
North Central								
FCT-Abuja	75.4	89.9	72.3	319	85.0	91.0	83.6	96
Benue	94.2	98.9	93.7	1,354	80.3	80.9	77.5	351
Kogi	60.0	80.8	58.9	654	81.0	84.5	77.6	156
Kwara	60.6	70.5	58.1	684	66.1	72.9	61.3	208
Nasarawa	70.6	88.4	66.8	648	96.3	97.4	96.2	206
Niger	47.9	58.2	46.9	1,357	88.6	92.3	85.4	442
Plateau	61.5	80.7	57.4	875	51.0	56.0	48.4	246
North East								
Adamawa	81.1	94.1	81.0	903	64.7	80.0	57.3	218
Bauchi	49.3	89.5	48.0	1,343	51.0	63.4	46.3	420
Borno	58.2	84.9	56.8	1,469	69.3	78.9	63.0	398
Gombe	73.8	85.4	72.4	717	60.6	78.0	57.8	240
Taraba	82.0	91.6	79.4	877	75.5	82.0	71.1	187
Yobe	51.9	90.3	49.8	1,327	65.1	73.1	59.1	472
North West								
Jigawa	65.5	98.2	64.9	1,382	90.8	96.4	88.9	291
Kaduna	87.1	95.3	85.8	2,493	95.1	95.5	94.4	636
Kano	80.2	97.1	79.7	2,692	68.0	87.5	63.9	676
Katsina	70.2	93.3	68.7	2,283	75.3	90.0	70.6	687
Kebbi	70.7	79.1	69.3	1,136	57.6	77.5	53.8	291
Sokoto	55.8	71.3	53.7	910	69.4	71.9	65.8	218
Zamfara	78.0	95.8	76.5	1,328	78.4	83.2	67.6	396
South East								
Abia	90.2	96.7	89.1	631	87.4	97.1	85.5	185
Anambara	79.6	93.9	78.2	1,477	98.2	99.5	98.2	409
Ebonyi	73.8	95.0	72.5	1,027	89.2	96.0	87.8	233
Enugu	80.7	95.4	79.9	880	98.9	99.6	98.5	192
Imo	71.5	93.4	69.4	948	77.5	85.0	70.7	337
South South								
Akwa Ibom	79.7	88.1	75.7	948	89.8	94.7	86.6	291
Bayelsa	62.4	74.7	61.0	298	94.4	97.0	93.8	109
Cross River	74.9	82.6	67.3	574	72.8	80.4	66.7	137
Delta	69.3	80.7	67.4	931	68.3	69.0	59.3	326
Edo	66.5	83.5	59.8	555	91.7	95.7	90.2	140
Rivers	80.0	90.1	76.3	1,534	92.4	94.2	90.0	435
South West								
Ekiti	89.5	91.3	86.8	475	81.4	84.0	80.9	139
Lagos	80.7	84.4	75.8	2,891	77.0	84.9	73.1	845
Ogun	65.4	88.3	60.4	927	93.7	90.0	85.8	309
Ondo	83.5	84.9	75.3	683	77.7	89.8	72.9	247
Osun	80.1	83.3	78.2	938	53.6	86.4	50.6	269
Oyo	71.2	85.0	69.5	1,352	92.3	91.4	88.3	432

Continued...

Table 20—Continued

	Percentage of women who say HIV can be prevented by:				Percentage of men who say HIV can be prevented by:			
	Using condoms ¹	Limiting sexual intercourse to one uninfected partner ²	Using condoms and limiting sexual intercourse to one uninfected partner ^{1,2}	Number of women	Using condoms ¹	Limiting sexual intercourse to one uninfected partner ²	Using condoms and limiting sexual intercourse to one uninfected partner ^{1,2}	Number of men
Education								
No education	62.5	84.3	60.9	14,603	66.0	76.3	60.7	2,555
Primary	70.3	87.5	68.3	6,039	76.4	85.1	72.3	1,590
Secondary	79.2	90.4	76.3	16,583	81.0	87.5	77.1	5,697
More than secondary	86.7	94.7	84.8	4,596	86.4	92.4	84.2	2,025
Wealth quintile								
Lowest	58.5	84.1	57.2	7,222	63.1	73.6	57.6	1,991
Second	67.8	86.1	65.9	8,045	72.9	84.0	68.8	2,123
Middle	73.1	87.9	70.8	8,207	80.7	87.9	77.0	2,393
Fourth	78.6	89.9	75.5	8,990	83.6	89.4	80.3	2,590
Highest	82.8	92.5	80.6	9,357	85.4	89.9	81.9	2,770
Total 15-49	72.9	88.3	70.7	41,821	78.1	85.6	74.1	11,868
50-59	na	na	na	na	78.4	89.5	75.2	1,443
Total 15-59	na	na	na	na	78.1	86.0	74.3	13,311

na = Not applicable

¹ Using condoms every time they have sexual intercourse

² Partner who has no other partners

Women and men in urban areas are more likely to be knowledgeable about HIV prevention methods than their counterparts in rural areas. In general, better-educated respondents and those in the highest wealth quintile are considerably more knowledgeable of HIV prevention methods than other respondents.

3.14.2 Comprehensive Knowledge about HIV Prevention among Young People

Table 21 presents information about comprehensive knowledge of HIV prevention among young people age 15-24. Comprehensive knowledge of HIV prevention is defined as knowing that both condom use and limiting sexual intercourse to one uninfected partner are HIV prevention methods, knowing that a healthy-looking person can have HIV, and rejecting the two most common local misconceptions about HIV transmission: that HIV can be transmitted by mosquito bites and by sharing food with a person who has HIV. Knowledge of how HIV is transmitted is crucial in enabling people to avoid HIV infection.

Table 21 Knowledge about HIV prevention among young people

Percentage of young women and young men age 15-24 with comprehensive knowledge about HIV prevention, according to background characteristics, Nigeria DHS 2018

Background characteristic	Women age 15-24		Men age 15-24	
	Percentage with knowledge about HIV prevention ¹	Number of women	Percentage with knowledge about HIV prevention ¹	Number of men
Age				
15-19	11.5	8,448	12.2	2,415
15-17	10.4	5,242	11.4	1,583
18-19	13.3	3,206	13.7	832
20-24	14.0	6,835	14.8	1,472
20-22	13.8	4,625	13.9	1,038
23-24	14.3	2,211	16.7	435
Marital status				
Never married	12.8	8,763	13.3	3,641
Ever had sex	17.8	2,334	18.4	681
Never had sex	11.0	6,429	12.2	2,960
Ever married	12.4	6,521	10.5	246
Residence				
Urban	12.7	6,737	15.7	1,661
Rural	12.6	8,547	11.3	2,227
Zone				
North Central	16.0	2,225	10.9	566
North East	11.1	2,696	12.4	743
North West	12.0	4,959	10.9	1,261
South East	11.4	1,586	14.5	378
South South	16.4	1,577	23.5	434
South West	10.8	2,241	12.6	506
State				
North Central				
FCT-Abuja	17.0	117	7.6	28
Benue	21.7	543	6.3	101
Kogi	15.0	248	16.0	59
Kwara	17.1	242	6.5	80
Nasarawa	19.1	247	22.3	83
Niger	10.2	500	9.9	136
Plateau	12.9	328	8.3	79
North East				
Adamawa	8.4	338	7.3	66
Bauchi	9.6	531	6.6	168
Borno	10.6	633	17.1	134
Gombe	9.3	277	13.5	113
Taraba	20.2	370	17.2	58
Yobe	9.4	547	13.5	204
North West				
Jigawa	12.5	549	14.6	109
Kaduna	14.6	961	12.7	207
Kano	12.3	1,129	11.1	284
Katsina	9.2	980	13.0	308
Kebbi	28.9	425	9.0	107
Sokoto	3.3	337	6.0	87
Zamfara	4.0	576	5.9	159
South East				
Abia	16.6	195	9.4	59
Anambara	8.1	475	7.9	90
Ebonyi	7.5	345	29.1	69
Enugu	13.0	300	16.3	62
Imo	16.5	270	12.1	99
South South				
Akwa Ibom	20.7	339	14.0	87
Bayelsa	18.9	101	34.2	34
Cross River	18.0	194	20.2	39
Delta	13.3	311	15.1	108
Edo	17.6	168	21.2	48
Rivers	13.5	464	36.8	119
South West				
Ekiti	21.5	150	14.2	40
Lagos	11.6	889	7.0	167
Ogun	3.3	265	(4.7)	57
Ondo	15.6	234	19.8	86
Osun	10.4	322	10.7	63
Oyo	7.2	382	21.6	94

Continued...

Table 21—Continued

Background characteristic	Women age 15-24		Men age 15-24	
	Percentage with knowledge about HIV prevention ¹	Number of women	Percentage with knowledge about HIV prevention ¹	Number of men
Education				
No education	10.7	4,383	6.8	802
Primary	12.5	1,601	11.6	370
Secondary	13.5	8,262	15.4	2,404
More than secondary	14.3	1,037	14.3	311
Total 15-24	12.6	15,284	13.2	3,888

Note: Figures in parentheses are based on 25-49 unweighted cases.
¹ Knowledge about HIV prevention means knowing that consistent use of condoms during sexual intercourse and having just one uninfected faithful partner can reduce the chance of getting HIV, knowing that a healthy-looking person can have HIV, and rejecting the two most common local misconceptions about transmission or prevention of HIV (that HIV can be transmitted by mosquito bites and by sharing food with a person who has HIV).

Table 21 shows that 13% each of young women and young men have comprehensive knowledge of HIV prevention. Never-married young women and men who have ever had sex are slightly more likely to be knowledgeable about HIV prevention than young women and men who are married. Among both sexes, the proportion with knowledge generally increases with age and educational attainment. Urban young people are slightly more likely than rural young people to have knowledge of HIV prevention.

3.14.3 Multiple Sexual Partners

Limiting the number of sexual partners and practicing protected sex are crucial in the fight against the spread of sexually transmitted infections, including HIV. Respondents to the 2018 NDHS were asked detailed questions about their sexual behaviour, including the number of partners they had in the 12 months preceding the survey and condom use during their most recent sexual encounter. Table 22.1 shows that only 1% of women reported having multiple sexual partners in the 12 months preceding the survey and 9% reported having sexual intercourse with a person who was neither their husband nor lived with them. Twenty-seven percent each of never-married women and divorced, separated, or widowed women had sexual intercourse with a person who was neither their husband nor lived with them. Among women who had multiple sexual partners in the 12 months preceding the survey, 33% used a condom during their last sexual intercourse. Similarly, 36% of women who had sexual intercourse with a person who was neither their husband nor lived with them used a condom during their last sexual intercourse. Women in Nigeria have had an average of 2.1 sexual partners in their lifetime.

Table 22.1 Multiple sexual partners and higher-risk sexual intercourse in the past 12 months: Women

Among all women age 15-49, percentage who had sexual intercourse with more than one sexual partner in the past 12 months and percentage who had intercourse in the past 12 months with a person who was neither their husband nor lived with them; among women having more than one partner in the past 12 months, percentage reporting that a condom was used during last intercourse; among women who had sexual intercourse in the past 12 months with a person who was neither their husband nor lived with them, percentage who used a condom during last sexual intercourse with such a partner; and among women who ever had sexual intercourse, mean number of sexual partners during their lifetime, according to background characteristics, Nigeria DHS 2018

Background characteristic	All women			Women who had 2+ partners in the past 12 months		Women who had intercourse in the past 12 months with a person who was neither their husband nor lived with them		Women who ever had sexual intercourse ¹	
	Percentage who had 2+ partners in the past 12 months	Percentage who had intercourse in the past 12 months with a person who was neither their husband nor lived with them	Number of women	Percentage who reported using a condom during last sexual intercourse	Number of women	Percentage who reported using a condom during last sexual intercourse with such a partner	Number of women	Mean number of sexual partners in lifetime	Number of women
Age									
15-24	1.3	12.6	15,284	35.6	194	37.9	1,923	1.6	8,811
15-19	0.7	9.6	8,448	31.5	63	34.2	809	1.4	2,983
20-24	1.9	16.3	6,835	37.6	131	40.5	1,114	1.8	5,828
25-29	2.0	9.5	7,255	38.3	146	42.0	687	2.1	6,959
30-39	1.3	6.2	11,641	27.8	157	30.3	723	2.4	11,359
40-49	0.8	4.3	7,642	27.5	58	21.5	330	2.2	7,505
Marital status									
Never married	3.4	27.4	10,550	37.3	354	37.9	2,890	2.8	3,745
Married/living together	0.4	0.7	29,090	14.8	127	34.6	194	1.9	28,768
Divorced/separated/widowed	3.3	26.6	2,181	45.7	72	25.1	580	2.8	2,121
Residence									
Urban	1.6	11.2	19,163	36.8	305	36.7	2,147	2.3	15,010
Rural	1.1	6.7	22,658	28.8	248	34.3	1,517	1.9	19,624
Zone									
North Central	1.3	9.1	5,891	37.8	75	44.3	536	1.9	4,961
North East	1.3	5.0	6,636	40.2	83	32.8	335	1.7	5,497
North West	0.2	0.9	12,225	*	26	47.6	112	1.9	10,333
South East	1.3	12.8	4,963	24.4	66	37.6	636	1.9	4,026
South South	3.8	22.6	4,840	38.3	183	31.8	1,092	3.1	3,962
South West	1.6	13.1	7,266	23.4	119	33.6	952	2.3	5,855
State									
North Central									
FCT-Abuja	2.3	11.7	319	(78.4)	7	56.6	37	5.7	239
Benue	2.3	14.9	1,354	(47.8)	31	62.3	202	2.3	1,164
Kogi	0.6	11.8	654	*	4	35.4	77	1.6	562
Kwara	0.3	7.6	684	*	2	26.9	52	1.9	563
Nasarawa	1.4	10.0	646	*	9	36.2	65	1.3	528
Niger	0.5	2.2	1,357	*	7	(28.8)	30	1.4	1,185
Plateau	1.8	8.3	875	*	16	23.2	72	1.7	719
North East									
Adamawa	3.1	14.6	903	(67.2)	28	45.9	132	2.8	793
Bauchi	0.1	0.0	1,343	*	0	*	0	1.2	1,184
Borno	1.1	3.8	1,469	*	16	(32.0)	56	1.3	1,107
Gombe	0.5	2.3	717	*	3	(29.5)	17	1.5	598
Taraba	4.1	14.8	877	18.7	36	20.6	130	2.4	756
Yobe	0.0	0.0	1,327	*	0	*	1	1.4	1,059
North West									
Jigawa	0.0	0.1	1,382	*	0	*	2	1.5	1,196
Kaduna	0.7	3.8	2,493	*	18	52.3	94	1.9	2,149
Kano	0.0	0.4	2,692	*	1	*	12	1.5	2,197
Katsina	0.2	0.2	2,283	*	5	*	4	3.6	1,856
Kebbi	0.1	0.0	1,136	*	1	*	0	1.1	978
Sokoto	0.2	0.0	910	*	2	*	0	1.3	809
Zamfara	0.0	0.1	1,328	*	0	*	1	1.1	1,149
South East									
Abia	1.3	15.5	630	*	8	47.3	98	1.8	518
Anambara	0.8	14.0	1,477	*	12	33.9	207	1.8	1,238
Ebonyi	0.8	8.3	1,027	*	8	15.8	86	1.6	806
Enugu	1.2	12.6	880	*	11	50.0	111	1.5	684
Imo	2.8	14.2	948	(28.7)	27	40.1	135	2.9	779

Continued...

Table 22.1—Continued

Background characteristic	All women			Women who had 2+ partners in the past 12 months		Women who had intercourse in the past 12 months with a person who was neither their husband nor lived with them		Women who ever had sexual intercourse ¹	
	Percentage who had 2+ partners in the past 12 months	Percentage who had intercourse in the past 12 months with a person who was neither their husband nor lived with them	Number of women	Percentage who reported using a condom during last sexual intercourse	Number of women	Percentage who reported using a condom during last sexual intercourse with such a partner	Number of women	Mean number of sexual partners in lifetime	Number of women
South South									
Akwa Ibom	3.4	23.3	948	(12.8)	32	33.0	221	3.7	644
Bayelsa	1.5	17.9	298	*	4	8.7	54	1.8	258
Cross River	1.8	24.3	574	*	10	37.9	139	2.5	503
Delta	2.2	20.1	932	*	21	18.7	187	3.1	781
Edo	0.6	11.2	555	*	4	31.8	62	2.1	466
Rivers	7.3	27.9	1,534	49.0	112	37.6	428	3.7	1,311
South West									
Ekiti	1.6	11.8	475	*	8	28.9	56	2.1	406
Lagos	2.6	16.8	2,891	(21.5)	74	38.9	485	2.8	2,098
Ogun	0.9	9.8	927	*	8	42.0	91	2.0	810
Ondo	1.2	16.2	683	*	8	29.2	111	1.8	584
Osun	1.5	9.7	938	*	14	18.2	91	2.0	773
Oyo	0.5	8.7	1,352	*	6	23.7	118	2.2	1,183
Education									
No education	0.4	1.3	14,603	24.3	54	28.3	192	1.7	13,683
Primary	1.0	6.2	6,039	21.3	63	23.1	374	2.2	5,367
Secondary	2.0	13.6	16,583	35.0	332	34.7	2,253	2.3	11,704
More than secondary	2.3	18.4	4,596	39.4	106	45.4	844	2.5	3,880
Wealth quintile									
Lowest	0.7	2.6	7,222	13.6	50	25.7	189	1.5	6,461
Second	0.9	5.2	8,045	36.7	70	31.6	419	1.7	7,003
Middle	1.1	9.0	8,207	30.2	93	29.6	737	2.1	6,812
Fourth	2.1	12.4	8,990	35.1	187	37.7	1,114	2.4	7,185
Highest	1.6	12.9	9,357	37.6	154	40.5	1,204	2.6	7,175
Total	1.3	8.8	41,821	33.2	553	35.7	3,663	2.1	34,634

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

¹ Means are calculated excluding respondents who gave non-numeric responses.

Table 22.2 Multiple sexual partners and higher-risk sexual intercourse in the past 12 months: Men

Among all men age 15-49, percentage who had sexual intercourse with more than one sexual partner in the past 12 months and percentage who had intercourse in the past 12 months with a person who was neither their wife nor lived with them; among men having more than one partner in the past 12 months, percentage reporting that a condom was used during last intercourse; among men who had sexual intercourse in the past 12 months with a person who was neither their wife nor lived with them, percentage who used a condom during last sexual intercourse with such a partner; and among men who ever had sexual intercourse, mean number of sexual partners during their lifetime, according to background characteristics, Nigeria DHS 2018

Background characteristic	All men			Men who had 2+ partners in the past 12 months		Men who had intercourse in the past 12 months with a person who was neither their wife nor lived with them		Men who ever had sexual intercourse ¹	
	Percentage who had 2+ partners in the past 12 months	Percentage who had intercourse in the past 12 months with a person who was neither their wife nor lived with them	Number of men	Percentage who reported using a condom during last sexual intercourse	Number of men	Percentage who reported using a condom during last sexual intercourse with such a partner	Number of men	Mean number of sexual partners in lifetime	Number of men
Age									
15-24	3.8	15.3	3,888	56.0	149	62.1	595	3.3	913
15-19	1.3	7.9	2,415	(59.7)	31	56.6	191	2.5	236
20-24	8.0	27.5	1,472	55.1	118	64.7	405	3.6	677
25-29	12.3	29.0	1,599	46.6	197	68.7	464	3.7	1,214
30-39	16.0	15.3	3,624	19.4	580	65.1	555	4.6	3,313
40-49	21.7	8.5	2,757	9.6	598	63.8	234	4.8	2,585
Marital status									
Never married	6.0	25.3	4,951	68.7	297	65.4	1,250	4.6	1,409
Married/living together	17.8	8.0	6,786	11.2	1,210	66.1	545	4.3	6,496
Divorced/separated/widowed	12.3	40.3	131	*	16	40.2	53	5.4	120
Type of union									
In polygynous union	84.5	4.7	864	2.1	730	(51.8)	40	3.9	856
Not in polygynous union	8.1	8.5	5,922	25.0	481	67.2	505	4.4	5,640
Not currently in union	6.2	25.6	5,082	66.8	313	64.4	1,303	4.6	1,529
Residence									
Urban	10.7	19.1	5,512	33.8	590	69.3	1,054	5.0	3,794
Rural	14.7	12.5	6,356	15.6	934	59.0	794	3.8	4,230
Zone									
North Central	12.6	16.3	1,704	15.6	215	64.4	278	3.2	1,192
North East	13.2	9.6	1,936	16.8	256	50.0	185	3.2	1,204
North West	14.4	3.4	3,195	4.5	460	67.4	109	1.9	1,836
South East	9.6	22.4	1,355	47.2	130	69.2	303	6.6	940
South South	18.6	36.3	1,438	45.1	267	64.6	522	9.9	1,016
South West	8.7	20.1	2,240	33.8	195	68.0	451	4.2	1,837
State									
North Central									
FCT-Abuja	6.6	7.1	96	*	6	(83.6)	7	2.5	65
Benue	8.4	18.1	351	(25.1)	30	87.7	63	3.0	258
Kogi	17.2	40.0	156	(11.0)	27	46.6	62	4.4	129
Kwara	20.4	29.1	208	22.5	42	55.9	61	2.9	155
Nasarawa	11.0	19.7	206	(19.3)	23	58.3	41	3.3	136
Niger	14.3	5.8	442	4.9	63	*	26	2.8	305
Plateau	9.7	7.6	246	(16.8)	24	*	19	3.6	143
North East									
Adamawa	17.6	28.5	218	(40.4)	38	49.6	62	4.8	184
Bauchi	13.1	5.1	420	17.9	55	*	22	2.2	264
Borno	15.9	12.6	398	19.3	63	(58.5)	50	4.1	276
Gombe	8.7	3.3	240	(2.1)	21	*	8	2.0	120
Taraba	17.7	18.2	187	(11.5)	33	(27.9)	34	4.2	135
Yobe	9.7	2.0	472	(2.8)	46	*	9	2.0	225
North West									
Jigawa	12.8	0.4	291	(0.0)	37	*	1	2.0	183
Kaduna	19.6	10.8	636	8.0	125	(79.3)	69	2.5	449
Kano	10.9	0.9	676	0.0	74	*	6	1.6	335
Katsina	13.4	1.8	687	5.6	92	*	13	1.6	338
Kebbi	19.2	2.6	291	0.0	56	*	8	2.0	180
Sokoto	10.2	0.6	218	*	22	*	1	1.9	125
Zamfara	13.5	3.0	396	4.4	53	*	12	1.7	226

Continued...

Table 22.2—Continued

Background characteristic	All men			Men who had 2+ partners in the past 12 months		Men who had intercourse in the past 12 months with a person who was neither their wife nor lived with them		Men who ever had sexual intercourse ¹	
	Percentage who had 2+ partners in the past 12 months	Percentage who had intercourse in the past 12 months with a person who was neither their wife nor lived with them	Number of men	Percentage who reported using a condom during last sexual intercourse	Number of men	Percentage who reported using a condom during last sexual intercourse with such a partner	Number of men	Mean number of sexual partners in lifetime	Number of men
South East									
Abia	2.6	20.9	185	*	5	69.8	39	6.7	150
Anambara	9.5	18.6	409	(53.1)	39	87.1	76	4.0	306
Ebonyi	9.1	15.7	233	(49.4)	21	(69.0)	37	8.3	166
Enugu	4.2	21.7	192	*	8	(86.7)	42	3.8	146
Imo	17.1	32.6	337	42.3	57	50.1	110	12.0	172
South South									
Akwa Ibom	6.9	31.3	291	*	20	72.5	91	3.9	202
Bayelsa	20.3	40.6	109	32.5	22	51.2	44	8.9	93
Cross River	4.9	23.7	137	*	7	(65.5)	32	4.7	112
Delta	12.4	25.1	326	(36.1)	40	63.0	82	15.6	172
Edo	18.2	35.2	140	(50.3)	25	59.7	49	8.4	103
Rivers	35.0	51.3	435	45.3	152	65.6	223	13.1	335
South West									
Ekiti	11.7	26.4	139	(39.8)	16	73.8	37	11.4	106
Lagos	5.9	23.0	845	(41.1)	50	71.5	194	3.3	727
Ogun	8.9	7.5	309	*	28	*	23	3.2	253
Ondo	18.5	37.7	247	41.1	46	61.7	93	6.0	197
Osun	9.2	19.8	269	*	25	(67.7)	53	3.2	228
Oyo	7.4	11.7	432	*	32	(56.6)	50	3.9	326
Education									
No education	16.9	3.9	2,555	3.5	432	40.8	101	2.4	1,769
Primary	13.4	10.5	1,590	14.3	213	56.4	167	4.6	1,181
Secondary	11.1	19.6	5,697	32.2	633	65.1	1,118	5.2	3,485
More than secondary	12.2	22.8	2,026	38.9	246	72.6	461	4.6	1,590
Wealth quintile									
Lowest	12.1	5.0	1,991	4.2	242	37.1	99	2.4	1,216
Second	15.5	9.4	2,123	13.1	328	57.5	200	3.3	1,362
Middle	14.2	16.2	2,393	20.9	340	59.3	388	4.3	1,600
Fourth	11.9	20.5	2,590	31.7	307	66.2	532	5.5	1,758
Highest	11.1	22.7	2,770	40.3	306	73.9	629	5.3	2,087
Total 15-49	12.8	15.6	11,868	22.7	1,524	64.9	1,848	4.4	8,025
50-59	23.4	4.4	1,443	3.4	338	49.0	64	4.4	1,355
Total 15-59	14.0	14.4	13,311	19.2	1,862	64.3	1,912	4.4	9,379

Note: Figures in parentheses are based on 25-49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

¹ Means are calculated excluding respondents who gave non-numeric responses.

Table 22.2 shows that 13% of men age 15-49 reported having had two or more sexual partners during the 12 months prior to the survey, while 16% reported that they had sexual intercourse with a person who was neither their wife nor lived with them. Among men who had two or more sexual partners in the 12 months prior to the survey, 23% reported using a condom during their last sexual intercourse. Sixty-five percent of men who had sexual intercourse with a person who was neither their wife nor lived with them used a condom during their last sexual intercourse. Men in Nigeria have had an average of 4.4 sexual partners in their lifetime.

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