

# Counting Births, Deaths and Marriages: Knowledge and Perception of Heads of Households about Vital Statistics Registration in Southwestern Nigeria

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## ABSTRACT

**Background:** Vital statistics provide crucial and critical information on the population in a country, which is useful for policy and planning, particularly in the health sector. This study aimed to assess the knowledge and perception about births, deaths and marriages registration among heads of households in Osogbo, Osun-State.

**Methodology:** This was a descriptive cross sectional study conducted among 400 heads of households in Olorunda and Osogbo Local Government Areas of Osun State. Respondents were recruited using a multistage sampling technique. Data was analyzed using IBM SPSS and level of significance was set at  $p$ -value  $< 0.05$ .

**Results:** The mean age of the respondents was  $32.4 \pm 10$  years. A statistically significant association was found between knowledge of deaths registration and age ( $p=0.004$ ), sex ( $p=0.016$ ), ethnicity ( $p=0.037$ ). Knowledge of marriage registration among respondents showed a statistically significant association with level of education as respondents with secondary and tertiary levels of education were 7 and 9 times more likely to have good knowledge of the marriage registration process respectively. A statistically significant association was found between perceptions about deaths registration, sex, educational status as well as the occupation of the respondents ( $p<0.05$ ). Heads of households and their spouses with some formal education had statistically significant higher odds of having good perception about marriage registration.

**Conclusion:** This study found that socio-demographic profile of respondents significantly influenced their knowledge and perception about registration of vital statistics. Targeting heads of households for educational interventions may improve their perception about births, deaths and marriage registration.

**Keywords:** Births, deaths, marriages, registration, vital statistics, households

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## INTRODUCTION

Vital statistics obtained through a civil registration system provides accurate, complete, timely and continuous information on vital events in the lives of the people within a given geographic area.(1) These vital statistics gives crucial and critical information on the population in a country, useful for policy and planning in many sectors, and are of particular

importance, in the health sector in relation to fertility, maternal and child health and age, sex and disease-specific mortality. They include live births, deaths, marriages, registered partnerships, separations, divorces, legal dissolutions of registered partnerships and annulment of marriage, as well as adoptions, legitimation and recognitions (2,3). Globally, about two-thirds of 57 million annual deaths (representing 38 million deaths) go

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unregistered, and as well as up to 230 million children under the age of five do not have official birth records(4). According to UNICEF estimates, 27% of children under the age of five worldwide do not have birth certificates, with the majority of these children residing in South Asia (31%) and sub-Saharan Africa (57%)(5). Even though birth registration is compulsory in Nigeria, as stipulated under Act number 69 of 1992, only 30 percent of children under the age of 5 have had their births registered (6,7).

Furthermore, deaths of young children are less likely to be reported and registered compared to death of an adult, leading to a potential considerable underestimation of under-five mortality. Consequently, deaths at young ages may also go unregistered because the act of registration is perceived as a sad reminder of the deceased's painful and sudden exit from the world, particularly in less developed countries (8,9). Among adults, deaths due to unsafe abortions, suicide, and HIV/AIDS may also be under-reported, and not registered to avoid stigmatization of the family. In many countries in Africa, large proportions of deaths occur outside the health system and formal medical certification is therefore not possible (1,8). This further hampers compliance with registration of deaths, resulting in over reliance on health facility based data which are not representative(8). While birth and death registration in developed countries is done well enough to be useful for determining population changes and planning, the situation in most developing countries is very poor. Hence, millions of people were born and died without having any record of their existence on earth(2,10,11).

Likewise, the registration of marriages and divorces creates legal documents that are used to establish and protect the civil rights of people. Marriage registration is an instrument to protect children against underage marriage and for the protection of women and their children with regards to property rights in case of divorce or death of the husband. (12,13) A previous study establishes that three Nigerian marriage systems exist: Islamic marriage, customary marriage, and formal or registry marriage. Nigerian law completely recognizes each of these three types of marriage as unique and distinct from the others (14). Nigerian customary law, which governs marriage among the country's numerous ethnic groups, Islamic law, which governs marriage within the Islamic faith, and the Marriage Act, which governs formal marriage, are the laws governing marriage in Nigeria(14). A survey done in an Asian country reported that majority of couples (55%) do not obtain a marriage certificate from the civil registry. In addition, about 75% of children from these couples do not have a birth certificate, due to the fact that children can only obtain a birth certificate if a valid marriage certificate is presented to the civil registry office. (15) Therefore, children in Africa and other parts of the world whose births are not captured by Civil Registration Vital System (CRVS) systems are subject to

increased vulnerability that comes with not having a legally recognized identity(2).

In some African countries, such as Egypt, Gambia and Kenya, the national legal frameworks separate the registration of births and deaths from marriages. In these instances, only the Ministry of Justice is responsible for the registration of marriages and can also do so in combination with the civil registration authority as seen in Ghana. Mozambique is the only African country where the Ministry of Justice acts as the registrar for four basic vital events namely; births, deaths, marriages and divorces (16). However, in Nigeria, the registration of vital events involves multiple stake holders, including National Population Commission (NPC), health sector, Local Government Areas (LGAs), and Departments of Justice, Security and the Interior. NPC has registration hierarchy and infrastructure deployed at every level of political administration and mechanisms for efficient coordination of registration and production of vital statistics on live-births, deaths and stillbirths amongst other vital events– (17). The National Population Commission's headquarters in Osogbo and the 30 Local Government Areas (LGAs) registries are in charge of vital statistics registration in Osun-state. In spite of these stakeholders' role, approximately 70% of births still go unregistered in Nigeria, according to a report by UNICEF.(18,19)

Barriers to registration identified in previous studies within the country includes high cost of registration, lack of physical access to registration sites, complexity of registration procedures and

limited knowledge of the benefits of registration and of the procedures involved. The significantly low health seeking behavior of the populace leading to a large proportion of births and deaths still occurring outside the health facilities is also identified as a factor influencing the under-registration of these vital events in Nigeria (19,20). Also, it is well documented by previous studies that certain socio-economic factors may enhance or constrain births, deaths and marriage registration particularly at household levels. These factors includes affiliation of heads of households with traditional religion, poor knowledge about importance of registration of vital events, residing in rural communities populated with poor and less educated individuals amongst others(10,18,21).

The importance of registration of births, deaths and marriages for national and local planning as well as the effects of knowledge and perception of the heads of households about vital statistics registration has not received adequate attention in Nigeria.

Hence, this study aimed to assess how the knowledge and perception of household heads influence births, deaths and marriages registration, and perhaps these could be targeted for health promotion in Osogbo and Olorunda LGAs in Osun-State, Southwestern Nigeria.

## MATERIALS AND METHODS

### Study Location

The study was carried out in Osogbo, Osun State, situated in the south-western part of Nigeria and was carved out of old Oyo State in 1991. It covers an area of approximately 14,875 square kilometres and Osogbo town is the state capital. Osun State has a population of about 3,423, 535 inhabitants (22). Administratively, Osogbo has two local governments' areas namely; Olorunda and Osogbo. People residing in Osogbo are predominantly Yorubas but tribes from other parts of the country such as the Hausas, Igbos, Edos and other nationalities such as Ghanaians and Togolese have also settled there (22).

The National Population Commission's headquarters is in Osogbo and the 30 Local Government Area registries are in charge of vital registration in Osun-state. Public and private hospitals, mission maternity centers and churches are also involved in the registration of some vital events in the State. The infant welfare clinics in Primary, Secondary and Tertiary Health facilities across Osun-State, also have a designated officer from the National Population Commission who are responsible for the registration and issuance of birth certificates to infants who present at these clinics who are yet to register their births.

### Research Instrument and Data Collection Methods

The study was conducted between January to March 2019, with only the person identified as the head of households and have lived for at least one year in the randomly selected communities of the two local government areas recruited into the study. The minimum sample size was determined by the Cochran's formula  $(Z^2pq/e^2)$  (23,24). With an acceptable margin of error of 5%, the calculated sample size was 400, after correcting an anticipated non-response of 10%. Participants were recruited using a multi-stage sampling technique. Stage 1 involved the selection of 5 political wards each in the two local government areas in Osogbo and Olorunda, by simple random sampling (balloting method), making a total of 10 wards. In stage 2, two (2) streets were selected from each of the 10 wards by simple random method using the balloting technique, making a total of 20 streets. Stage 3 involved listing eligible individuals within the households on the selected streets while stage 4 involved selection of actual respondents for interview. In cases where no eligible adult was found in a selected house, such household was replaced from the replacement list.

A semi-structured questionnaire was used to obtain information about the knowledge and perception of household heads about vital statistics registration. The questionnaire was divided into five sections to collect relevant information about the socio-demographic characteristics,

knowledge and perception about vital statistics registration among the households' heads.

### Validation and Pretest of the Instrument

The validity and reliability of the questionnaire were done before the final collection of data. Two Nigerian experts in the field of Demography in a Nigerian university evaluated the extent to which the variables in the questionnaires were relevant to the objectives of the study. Thereafter, the questionnaire was pretested among eligible heads of households in Ogbomoso North LGA, Oyo-state. The responses provided helped to clarify instructions as well as modified questions or response categories where necessary. The Cronbach's alpha coefficient of the questionnaire was 0.84, indicating an acceptable internal consistency.

### Measurement of Main Outcome Variables

The knowledge of the respondents about vital statistics registration was assessed using 15 questions adapted from the previous studies (8,20). The variables of interest included, the awareness about vital statistics registration within the community and the process of registering for vital statistics. Every correct response was given a score of 1 and an incorrect response got 0. The total obtainable score was 15. Composite scores were calculated and respondents having  $\geq 68\%$  of the total obtainable score were categorized as having good knowledge.

The perception of the respondents were scored accordingly and the study participants with correct responses were scored one and those with incorrect responses were scored zero. The perception of individuals about vital statistics registration was obtained using five items on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The responses were scored 5,4,3,2 and 1 in that order for a good perception. Composite scores were calculated and those scoring  $\geq 70\%$  were considered as having good perception. The cut-off points for knowledge and perception were set as informed by similar studies (25,26).

### Data analysis

The questionnaires were sorted out, entered into a computer and the obtained data was analyzed using Statistical Package for Social Sciences (SPSS) version 22. Bivariate analysis was used to determine the relationship between the dependent variables (which includes the perception and practice of the respondents on vital statistics registration) and the independent variables (such as age and gender of the respondents). In the multivariate analysis, the logistic regression model included only variables whose p-values were statistically significant and these were entered into the

model. The estimated coefficients were expressed as odds ratios (ORs) and their 95% confidence intervals were also calculated. The level of significance was set at  $p < 0.05$ .

**Ethical Considerations:** Before the study started, ethical approval was obtained from the Ethics and Research Council of the Institute of Public Health, Obafemi Awolowo University (IPH/OAU/12/1147). Each participant gave their informed consent after being fully informed about the study's goals. Respondents were informed that participation is entirely voluntary and that data security and confidentiality will be guaranteed.

## RESULTS

The mean age ( $\pm$  SD) of the study participants was  $32.4 \pm 10$  years with majority in the age-group 40-49 years (28.8%). Over half of the respondents were males (58%), had tertiary level of education (56%) while 46% were skilled workers. Most of the respondents were married (79.3%), and lived in monogamous family settings (85.5%). (Table 1)

Nearly all the respondents (99%), were aware of birth registration as a vital event. Majority of the respondents (77%) identified hospitals as the most common site for registration of births followed by the National population commission (59.6%). Most of the respondents regarded birth registration as a government planning tool for the future (81.6%) and necessary for school enrolment (61%). About 51.6% of the respondents were aware of registration of deaths, with 77% of them reporting the hospital as the main site of death registration. Majority of the respondents (90%) were aware of marriage registration and about (77.2%) of these had their marriages registered at the local government registries (Table 2)

About 60% of the respondents agreed that birth registration is useful to government in decision-making process. Also, 60% of the participants agreed that birth registration was affordable and 50% agreed that accessible. Similarly, 43.7% of the heads of households agreed that death registration was useful to government in decision making. Less than half of the participants reported that death registration services were easy to access (42.2%) and did not experience delay registering the deaths of family members (42.3%). Also, 48.6% of the respondents agreed that marriage registration was useful to government in the decision-making process while 55.6% agreed that the marriage registration is affordable for them (Table 3).

There was no statistically significant association between the knowledge of births registration, and respondents' socio-demographic characteristics. ( $p > 0.05$ ). The study found a statistically significant association between knowledge of deaths registration and age (OR=1.03, 95% CI=1.1-2.68,  $p=0.004$ ), sex (OR=1.72, 95%CI=1.1-2.68,  $p=0.016$ ),

**Table 1: Socio-demographic characteristics of heads of households**

Socio-demographic characteristics	Frequency (%) (n = 400)
<b>Age group ( in years)</b>	
<30	81 (20.3)
30-39	95 (23.8)
40-49	115 (28.8)
50-59	45 (11.3)
60 years and above	64 (16.0)
Mean age	$32.4 \pm 10$
<b>Sex</b>	
Male	233 (58.2)
Female	167 (41.8)
<b>Ethnicity</b>	
Yoruba	329 (82.3)
Igbo	54 (13.5)
Hausa	17 (4.3)
<b>Marital status</b>	
Single	50 (12.5)
Married	342 (85.5)
Widowed/Separated/Divorced	8 (2.2)
<b>Level of Education of respondents</b>	
No formal education	20 (5.0)
Primary education	38 (9.5)
Secondary	114 (28.5)
Tertiary education	228 (57.0)
<b>Level of education of spouse</b>	
No formal education	21 (5.3)
Primary education	44 (11.0)
Secondary	110 (27.5)
Tertiary education	225 (56.3)
No formal education	21 (5.3)
<b>Occupation</b>	
Unemployed	60 (15.0)
Skilled worker	184 (46.0)
Semi-skilled worker	112 (28.0)
Unskilled worker	44 (11.0)
Unemployed	60 (15.0)
<b>Family setting</b>	
Monogamy	317 (79.3)
Polygamy	83 (20.8)
<b>Religion</b>	
Christianity	240 (60.0)
Islam	159 (39.8)
Others	1 (0.3)

ethnicity (OR=0.49, 95% CI=0.25-0.96,  $p=0.037$ ) with respondents of Igbo ethnic descent 2 times less likely to have good knowledge of deaths registration (Table 4)

The study found a statistically significant association between knowledge of deaths registration and age (OR=1.03, 95% CI=1.1-2.68,  $p=0.004$ ), sex (OR=1.72, 95%CI=1.1-2.68,  $p=0.016$ ), ethnicity with respondents of Igbo (OR=0.49, 95% CI=0.25-0.96,  $p=0.037$ ) ethnic descents 2 times less likely to have good knowledge of deaths registration process (Table 4)

Knowledge of marriage registration among respondents

**Table 2: Knowledge and source of information on births, deaths and marriage registration among heads of households**

<b>Births registration</b>		<b>Deaths registration</b>		<b>Marriage registration</b>	
<b>Awareness of Births registration</b>	<b>Frequency (%)</b>	<b>Awareness of Deaths registration</b>	<b>Frequency (%)</b>	<b>Awareness of marriage registration</b>	<b>Frequency (%)</b>
<b>Sites of birth registration*</b>		<b>*Sites of death registration</b>		<b>*Sites of marriage registration</b>	
Hospital	305 (77.0)	Hospital	181 (77.0)	Mosques/Islamic centers	100 (27.8)
Mission homes/ church	206 (52.0)	Mission homes/ church	77 (37.4)	Mission homes/church	217 (60.3)
Local Government Registries	236 (59.6)	Local Government Registries	97 (47.1)	Local government registries	278 (77.2)
National Population Commission	194 (48.0)	National Population Commission	85 (21.3)		
<b>Importance of birth registration</b>		<b>*Importance of death registration</b>		<b>*Importance of marriage registration</b>	
Government planning tool for future	320 (81.6)	For remembrance/memorial	130 (63.2)	It provides a legal document for couple	304 (84.4)
School enrolment purpose	240 (61.0)	To know the occurrence and number of deaths in the population	123 (59.7)	To collect claims and benefits of deceased spouse	228 (63.3)
To know the age of a child	210 (53.8)	Identification of ghost workers in an establishment	108 (52.4)	Essential for the claims of inheritance by children	211 (58.6)
For welfare and social benefit	226 (57.0)	To collect claims and benefits of the deceased	132 (64.1)	To know the number of married adults in the population	160 (44.4)
		For burial rites	96 (47.0)	For Government Planning	105 (29.2)
		To establish the cause of death	105 (51.0)		
<b>Time for birth registration</b>		<b>Ideal time for death registration</b>		<b>Idea time for marriage registration</b>	
Immediately	235 (59.8)	Within 7 days of death	98 (47.6)	Within 60 days of contracting the marriage	91 (25.3)
Within 60 days of birth	54 (13.5)	Within 30 days of deaths	60 (29.1)	Before the marriage	189 (52.5)
Anytime	107 (26.8)	Anytime	41 (19.9)	Anytime	39 (10.8)
		I don't know	7 (3.4)	I don't know	41 (11.4)
<b>Birth registration process</b>		<b>Death registration process</b>		<b>*Marriage registration process</b>	
Filling of forms at hospital and issuance of certificate	333 (84.1)	Filling of forms at hospital and issuance of certificate	172 (83.5)	I filled forms at the mosque and was registered	160 (44.4)
Filling of forms at LGAs and issuance of certificate	222 (55.5)	Filling of forms at LGAs and issuance of certificate	86 (41.7)	I filled forms at the church and was registered	186 (51.7)
Filling of forms at National Population Commission and issuance of certificate	190 (47.8)	Filling of forms at National Population Commission and issuance of certificate	87 (42.2)	I filled forms at the local government registry and was registered	250 (69.4)
<b>*Main source of information about birth registration</b>		<b>*Main source of information about death registration</b>		<b>*Main source of information about marriage registration</b>	
Mass media	83 (20.8)	Mass media	60 (29.0)	Mass media	20 (5.6)
Health workers	220 (55.5)	Health workers	80 (38.7)	Local government registry	125 (34.7)
Friends	18 (4.5)	Friends	10 (4.8)	Friends	32 (8.9)
National Population Commission	43 (11.3)	National Population Commission	20 (9.7)	National population commission staff	63 (17.5)
Religious body	26 (1.5)	Religious body	12 (5.8)	Religious bodies	115 (31.9)

\*Multiple Responses

**Table 3: Perception of heads of households about births, deaths, and marriage registration**

Perception about births registration	Frequency (%) (n= 396)	Perception about deaths registration	Frequency (%) (n= 206)	Perception about marriage registration	Frequency (%) (n= 360)
Birth registration is useful to government in decision - making		Death registration is useful to government in decision making for citizen's health improvement		Marriage registration is useful to government in decision making for citizen's health improvement	
Strongly agree	121 (31.3)	Strongly Agree	57 (27.7)	Strongly agree	123 (34.2)
Agree	240 (60.0)	Agree	90 (43.7)	Agree	175 (48.6)
Indifferent	28 (7.0)	Indifferent	36 (17.5)	Indifferent	42 (11.7)
Disagree	4 (1.0)	Disagree	10 (4.8)	Disagree	15 (4.2)
Strongly disagree	3 (0.8)	Strongly disagree	13 (6.3)	Strongly disagree	5 (1.3)
Birth registration is affordable		Cost of death registration is affordable		The cost of marriage registration is affordable	
Strongly agree	111 (28.8)	Strongly Agree	74 (36.0)	Strongly agree	126 (35.0)
Agree	244 (61.0)	Agree	79 (38.3)	Agree	200 (55.6)
Indifferent	35 (8.8)	Indifferent	26 (12.6)	Indifferent	19 (5.3)
Disagree	5 (1.3)	Disagree	18 (8.7)	Disagree	10 (2.8)
Strongly disagree	1 (0.3)	Strongly disagree	9 (4.4)	Strongly disagree	5 (1.4)
Ease to access birth registration services		Ease of access to death registration services		Marriage registration process is simple and easy	
Strongly agree	114 (29.5)	Strongly Agree	64 (31.1)	Strongly agree	130 (36.1)
Agree	200 (50.0)	Agree	87 (42.2)	Agree	199 (55.3)
Indifferent	56 (14.0)	Indifferent	32 (15.5)	Indifferent	15 (4.2)
Disagree	6 (1.5)	Disagree	10 (4.9)	Disagree	12 (3.3)
Strongly disagree	20 (5.0)	Strongly disagree	13 (6.3)	Strongly disagree	4 (1.1)
Birth registration forms are simple and easy to fill		Registration can be done without delay		The marriage registration forms were simple and easy to fill	
Strongly agree	135 (34.8)	Strongly Agree	52 (25.2)	Strongly agree	126 (35.0)
Agree	206 (51.5)	Agree	87 (42.3)	Agree	150 (41.7)
Indifferent	44 (11.0)	Indifferent	34 (16.5)	Indifferent	65 (18.1)
Disagree	6 (1.5)	Disagree	22 (10.7)	Disagree	12 (3.3)
Strongly disagree	5 (1.3)	Strongly disagree	11 (5.3)	Strongly disagree	7 (1.9)
Birth registration can be done without delay at the registration site		The staff at the registration sites were friendly		Marriage registration was done without delay	
Strongly agree	108 (27.8)	Strongly Agree	45 (21.8)	Strongly agree	118 (32.8)
Agree	218 (54.5)	Agree	120 (58.3)	Agree	160 (44.4)
Indifferent	53 (13.3)	Indifferent	23 (11.2)	Indifferent	20 (5.6)
Disagree	17 (4.3)	Disagree	12 (5.8)	Disagree	40 (11.1)
Strongly disagree	1 (0.3)	Strongly disagree	6 (2.9)	Strongly disagree	22 (6.1)
Current process of birth registration is acceptable to me				The staff at the registration site are friendly to me	
Strongly agree	105 (26.5)			Strongly agree	103 (28.6)
Agree	231 (58.3)			Agree	145 (40.2)
Indifferent	51 (12.8)			Indifferent	60 (16.7)
Disagree	8 (2.0)			Disagree	23 (6.4)
Strongly disagree	1 (0.3)			Strongly disagree	29 (8.1)

**Table 4: Factors associated with knowledge of vital statistics registration among Heads of households**

Factors	Knowledge of birth registration		Knowledge of death registration		Knowledge of marriage registration	
	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p
Age	0.99 (0.98-1.01)	0.427	1.03 (1.01-1.04)	0.004	1.01 (0.99-1.03)	0.259
Sex						
Male						
Female	0.69 (0.45-1.06)	0.088	1.72 (1.1-2.68)	0.016	0.76 (0.49-1.19)	0.231
Ethnicity						
Yoruba						
Igbo	1.54 (0.8-2.97)	0.195	0.49 (0.25-0.96)	0.037	2.1 (1.01-4.38)	0.048
Hausa	1.43 (0.42-4.85)	0.562	0.54 (0.15-1.99)	0.353	0.34 (0.09-1.28)	0.112
Educational Status						
No formal education						
Primary education	0.43 (0.11-1.7)	0.228	0.79 (0.2-3.12)	0.741	3.71 (0.81-16.92)	0.091
Secondary education	0.57 (0.16-2.06)	0.393	0.58 (0.16-2.01)	0.386	9.86 (2.28-42.56)	0.002
Higher institution	0.43 (0.12-1.53)	0.191	1.36 (0.39-4.66)	0.629	7.08 (1.66-30.29)	0.008
Spouse's educ. status						
No formal education						
Primary education	2.68 (0.71-10.08)	0.146	0.39 (0.1-1.57)	0.187	0.72 (0.18-2.97)	0.65
Secondary education	2.53 (0.67-9.57)	0.171	0.56 (0.14-2.23)	0.408	0.45 (0.1-1.91)	0.278
Higher education	1.78 (0.49-6.42)	0.379	0.46 (0.12-1.76)	0.255	0.43 (0.1-1.81)	0.251
Occupation						
Unemployed						
Skilled worker	0.64 (0.32-1.3)	0.216	1.16 (0.57-2.34)	0.68	1.99 (0.94-4.22)	0.071
Semi-skilled	0.82 (0.39-1.7)	0.587	0.81 (0.39-1.71)	0.584	1.22 (0.57-2.63)	0.607
Unskilled worker	0.57 (0.24-1.37)	0.208	0.58 (0.23-1.46)	0.249	0.93 (0.37-2.36)	0.876
Marital Status						
Others						
Married	1.32 (0.29-6.01)	0.719	2.98 (0.53-16.73)	0.216	0.57 (0.1-3.1)	0.511
Religion						
Christianity						
Islam	1.43 (0.88-2.33)	0.151	0.89 (0.54-1.46)	0.65	1.1 (0.67-1.83)	0.701
Family type						
Monogamy						
Polygamy	0.63 (0.36-1.09)	0.101	0.95 (0.54-1.68)	0.859	0.5 (0.29-0.89)	0.018
Constant	1.54 (0.18-13.5)	0.695	0.27 (0.03-2.88)	0.278	0.36 (0.03-4.15)	0.415

\*Skilled worker (professionals, doctor, lawyer, entrepreneur, teachers); Semi-skilled (artisans, traders); Unskilled worker (manual laborer)

showed a statistically significant association with level of education as respondents with secondary (OR=7.08, 95%CI=1.66-30.29, p=0.016) and tertiary levels of education (OR=9.86, 95%CI=2.28-42.56, p=0.008) were 7 and 9 times likely to have good knowledge of the marriage registration process respectively. Other significant determinants of knowledge of marriage registration includes; ethnicity (OR=2.1, 95%CI=1.01-4.38, p=0.048) and type of family (OR=1.72, 95%CI=0.29-4.15, p=0.018) (Table 4)

Factors associated with perception about birth registration in this study includes; level of education of the respondents, with having primary (OR=0.2, 95%CI=, 0.05-0.87, p=0.032) and secondary (OR=0.17, 95%CI=, 0.05-0.66, p=0.010) levels of education being statistically significant.

Spouse's level of education and occupation were also factors association with good perception about birth registration. A statistically significant association was found between

perceptions about deaths registration and sex, educational status as well as the occupation of the respondents.

Heads of households and their spouses with some formal education had statistically significant higher odds of having good perception about marriage registration. (Table 5)

## DISCUSSION

The sex distribution of respondents in this study closely aligns with the general findings within the country that the typical heads of households is male. Nearly all respondents were aware about birth registrations which is much higher than what was reported by Adedini and Odimegwu in Osun State (68.4%) and Isara et al in Edo State (69.6%) (27,28). The tertiary level of education of the study participants as well as their spouses may have an influence on the high level of awareness observed in this study. However, the study found

**Table 5: Factors associated with perception about vital statistics registration among Heads of households**

Factors	Perception about birth registration		Perception about death registration		Perception about marriage registration	
	OR (95% CI)	p	OR (95% CI)	p	OR (95% CI)	p
<b>Age</b>	1 (0.98-1.02)	0.953	1.01 (0.99-1.03)	0.285	1 (0.98-1.01)	0.779
<b>Sex</b>						
Male						
Female	1.05 (0.68-1.61)	0.83	1.83 (1.17-2.84)	0.008	1.38 (0.9-2.13)	0.142
<b>Ethnicity</b>						
Yoruba						
Igbo	0.92 (0.48-1.74)	0.789	0.54 (0.27-1.08)	0.080	0.67 (0.35-1.3)	0.238
Hausa	1.04 (0.31-3.52)	0.953	0.92 (0.27-3.21)	0.900	0.53 (0.15-1.87)	0.325
<b>Educational Status</b>						
No formal education						
Primary education	0.2 (0.05-0.87)	0.032	0.03 (0.01-0.21)	<0.001	0.3 (0.01-0.45)	0.005
Secondary education	0.17 (0.05-0.66)	0.010	0.06 (0.01-0.37)	0.002	0.11 (0.01-0.84)	0.004
Higher institution	0.31 (0.08-1.15)	0.080	0.07 (0.01-0.44)	0.004	2.68 (0.17-11.31)	0.001
Spouse's educ. status						
No formal education						
Primary education	3.73 (0.9-15.46)	0.069	2.25 (0.52-9.84)	0.279	8.48 (1.54-46.6)	0.014
Secondary education	4.85 (1.17-20.03)	0.029	1.96 (0.44-8.73)	0.379	6.6 (1.19-36.64)	0.031
Higher education	2.1 (0.55-8.08)	0.279	2.15 (0.5-9.15)	0.302	6.13 (1.14-32.87)	0.034
<b>Occupation</b>						
Unemployed						
Skilled worker	1.46 (0.73-2.89)	0.283	0.6 (0.29-1.23)	0.165	1.16 (0.58-2.33)	0.677
Semi-skilled	1 (0.48-2.05)	0.995	0.58 (0.27-1.24)	0.160	0.53 (0.25-1.1)	0.088
Unskilled worker	0.32 (0.12-0.83)	0.019	0.35 (0.14-0.91)	0.030	0.41 (0.17-1.03)	0.058
<b>Marital Status</b>						
Others						
Married	0.29 (0.05-1.73)	0.176	2.56 (0.47-13.82)	0.275	0.69 (0.15-3.24)	0.641
<b>Religion</b>						
Christianity						
Islam	1.36 (0.83-2.21)	0.220	1.35 (0.82-2.22)	0.235	1.29 (0.79-2.09)	0.308
<b>Family type</b>						
Monogamy						
Polygamy	0.58 (0.33-1.02)	0.058	1.05 (0.59-1.86)	0.864	0.72 (0.41-1.25)	0.244
Constant	3.83 (0.36-41.06)	0.268	2.48 (0.18-33.96)	0.496	4.29 (0.45-41.17)	0.207

\* Skilled worker (professionals, doctor, lawyer, entrepreneur, teachers); Semi-skilled (artisans, traders); Unskilled worker (manual laborer)

that only 11.3% of the heads of households regarded the National Population Commission (NPC) who is the agency saddled with the responsibility of birth registration in Nigeria as the main source of their information about birth registration. The inability of the study's heads of household to correctly identify the NPC as the parastatal in charge of demographic documentation may indicate a lack of collaboration between the NPC and the local communities and highlights the need for policy strategies aimed at educating the public about demographic documentation and its importance to the general welfare of the population. Previous studies have also identified lack of manpower amongst other resources as parts of the numerous challenges encountered by the National Population Commission in carrying out its constitutional duties of vital statistics registration (19,25).

In the current study, the perception of heads of households on births registration, showed that less than half of the respondents felt birth registration should be demanded by government for citizens to enjoy certain social benefits. Nearly half of the heads of households perceived that death registration on the other hand, is relevant to government in decision making for citizens' health improvement. This result is higher than that reported by studies conducted in Edo State, South-south Nigeria, and Kieni East district of Kenya where only 5.1% and 31% of their respondents respectively felt that death registration is less useful and important to the government (29,30). Our findings implies that while it was thought that death registrations were required, there didn't seem to be any particular advantages associated with the procedure that would motivate household heads to register deaths. According to Szwarcwald et al, in theory, no funeral

should happen without a death registration and a death certificate, in reality, irregular funerals are known to happen since respondents in a Brazilian community where their study was carried out did not see the value of death registration.(26).

Perception of the respondents on marriage registration in this study, showed that cost of marriage registration is affordable, no delay was encountered in the registration process and the services were accessible. However, less than a quarter of the respondents agreed that the government was creating enough awareness about the marriage registration. This result is not far-fetched since marriages and divorces are social constructs rather than biological processes, in contrast to births and deaths. Therefore, the government needs to strengthen registration of marriages as it is crucial for gender equality, women's empowerment and sustainable development. A previous study by the United Nations found that most countries do not have reliable data to compute coverage of marriages and divorces. As a result, the coverage indicator of marriage and divorce registration is less useful for the purpose of comparing data across countries because statistics related to marriages and divorces are often not truly comparable due to cultural variations (31). Consequently, more still needs to be done in making the marriage registration data in the country adequate and reliable for government planning.

The factors associated with knowledge of deaths and marriage registration among heads of households in this study were age, sex, ethnic descent, level of education and their family setting. Having higher levels of education improves the abilities of individuals to negotiate any bureaucracy encountered during the registration of vital events. This finding is congruent with that reported in a study done among heads of households by Tobin et al(29), which also found a statistically significant association between marital status, level of education and knowledge of their respondents on births and death registration. Similarly, a baseline study conducted in Indonesia also reported that women in non-polygamous marriages were 3 times more likely to have a marriage registration compared to those in polygamous relationships(32). A Kenyan study also found that births and deaths registration were associated with selected demographic and socio-economic characteristics of their study participants(30). Respondents' and their spousal's level of education, occupation and sex were the factors associated with good perception about registration of births, deaths and marriage. Wodon and Yedan in Niger Republic similarly found that significantly lower chances of childbirth registration were linked to low levels of educational attainment, particularly among women, lower household wealth, and less desirable jobs for heads of households(33). Births, deaths and marriage registrations are truly vital to our nation's health and emergency preparedness systems. Hence, it is time heads of households' are engaged for a more effective health information system and a robust national statistics system.

**Study Limitation:** The study was conducted in urban local government areas with physical access to registration sites hence the findings may not be generalizable to the entire population.

## CONCLUSION

This study found that predictors of knowledge and perception about registration of births, deaths and marriages among heads of households were mainly their socio-demographic indices. Thus, providing educational interventions and opportunities for empowerment to household heads may greatly enhance their perception, especially with regard to death and marriage registration as legal and civic obligations.

### List of Abbreviations

1. LGAs: Local Government Areas
2. NPC: National Population Commission
3. HIV/AIDs: Human immunodeficiency virus/ acquired immunodeficiency syndrome
4. CRVS: Civil Registration Vital System
5. UNICEF: United Nations Children Fund

### Data Availability

The data can be made available by the corresponding author upon request.

### Author's Contribution

Authors ROA and AOO were involved in the development of the idea for the study. Authors ROA, AOO, AAA, EOT, JOA and AMA were involved in the data collection and data entry. Authors ROA, AOO, AAA, EOT, JOA and AMA were involved in the analysis and interpretation of data. Authors ROA, AOO, AAA, EOT, JOA and AMA participated in the manuscript preparation and its critical review. All authors finally read and agreed to the final presentation of the manuscript.

### Conflict of interest

The authors declare no conflict of interest associated with this manuscript.

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