



Assessment of usage of Selected Diaper Brands among Rural Households in Abia State, Nigeria

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Abstract— The study assessed the usage of selected diaper brands among rural households in Abia State, Nigeria. Specifically, the study described the socio-economic characteristics of respondents and determined the frequency of usage of selected diaper brands among rural households in the study area. Multi-stage sampling procedure was used to select 160 respondents for the study. Data were collected using structured questionnaire and analyzed with descriptive statistics such as frequency counts, percentages, mean and standard deviation while ordinary least square regression (OLS) was employed in testing the null hypothesis at 5% level of significance. The results showed that the mean age of the respondents was 43 years. Majority (79.4%) of the respondents were females while 20.6% were males. The results also revealed that rural households occasionally used baby ($\bar{x} = 2.91$) and adult ($\bar{x} = 2.09$) diapers in the study area. The OLS results showed that level of education (2.829***), estimated annual income (2.244**) and household size (2.157**) significantly influenced the frequency of usage of diaper brands among rural households at 1% and 5% levels of probability. The study concluded that rural households occasionally used majority of the selected baby and adult diaper brands in the study area. Therefore, it recommended among others that there is need for extension agencies through the community health extension workers to intensify efforts in increasing the frequency of extension visits to rural households in the study area in order to assist them in making informed decisions on their usage of diaper brands.



Keywords— Assessment, Usage, Diaper, Brands, Rural Households.

I. INTRODUCTION

There is increasing awareness among care givers towards baby hygiene, demand for baby care products less prone to skin infections and improved physiological comfort value (Jessy, 2024). In Nigeria, the use of diapers is common among care givers due to increased birth rate and awareness in hygiene and demand for sanitary products (Ikon, Nwokeocha, Akpan and Brown, 2025; Zakari, Maisalati, Abdullahi, Yakubu and Madu, 2024).

Diapers are clothed or synthetic disposable materials made from natural fibers like cotton, muslin, bamboo, wool, linen, jute, as well as artificial fibers such as non-woven polypropylene, polyethylene, nylon, polyester and other materials (Udoh, Ibeh, Nwosu, Arum and Okoli, 2024). Diapers are primarily worn by infants, toddlers, and by children who experience bedwetting. They are also used by

adults with incontinence or in certain circumstances where access to a toilet is unavailable (Eshitemi, Lakati and Karama, 2023).

Brands driving the consumption of diapers in Nigeria are Pampers by Procter & Gamble, Huggies by Kimberly Clark, Molfix by Hayat Kimya, and Kiss Kids by Bordargroup (Raymond, 2018). In Abia State, there are also local brands like Dr. Brown's by Wemy Nigeria Limited, Huggies, produced by Huggies Nigeria, and other players alike. There are several important drivers in the usage of diaper brands in Nigeria. For lower socio-economic classes, especially rural households, there is a close association between diapers usage and affordability (Raymond, 2018). Smaller pack sizes of diapers offer the advantage of smaller cash outlays, thereby promoting higher usage and they are also a key factor in purchase decisions, especially among

rural households (Ikon *et al.*, 2025). The management of excreta among vulnerable groups, such as babies, the sick, and the elderly, is a critical public health and dignity issue, particularly in rural areas in Nigeria. Limited access to diapers due to poverty, inadequate infrastructure, and restricted healthcare services compounds these challenges (Ikon *et al.*, 2025). In addition to economic and environmental challenges, cultural and socioeconomic factors heavily influence the usage of diapers among rural households in Nigeria. Specifically, research studies (Auna, 2022; Mbiereagu and Etumnu, 2021; Eze, 2021) revealed that income, education, and cultural background shape caregivers' usage of various diaper brands. From the foregoing, it is evident that there are a lot of factors that influence the usage of diapers among rural households. Nevertheless, there still exists a dearth of empirical information on the usage of selected diaper brands among rural households in Abia State, hence the study. Specifically, the study described the socio-economic characteristics of respondents and determined the frequency of usage of selected diaper brands among rural households in the study area. The study also hypothesized that socio-economic characteristics of rural households do not significantly influence their frequency of usage of selected diaper brands in the study area.

II. METHODOLOGY

The study was carried out in Abia State, Southeast Nigeria. The State is made up of seventeen (17) local government areas. The projected population growth of the State at 3.5%

from 2006 population figures is 4,637,969 persons (NPC, 2025). The State lies between Longitudes 7°23' and 8°02' East of the Equator and Latitudes 4°47' and 6°12' North of the Greenwich Meridian. It also occupies a land mass of 5,833.11km² (Abia State Planning Commission (ABSPC), 2018).

Multi-stage sampling procedure was used for the study. In the first stage, simple random sampling technique was used to select two (2) senatorial zones (Abia Central and Abia South) out of the three (3) senatorial zones in Abia State. In the second stage, simple random sampling technique was also employed in the selection of two (2) local government areas each from the sampled senatorial zones. Osisioma and Ikwuano local government areas were selected from Abia Central senatorial zone while Ukwa West and Ugunagbo were selected from Abia South senatorial zone. This gave a total of four (4) local government areas. In the third stage, four (4) communities were also selected from each of the sampled four (4) local government areas using simple random sampling technique. This gave a total of sixteen (16) selected communities. In the final stage, ten (10) households were randomly selected from each of the selected communities. This gave a sample size of one hundred and sixty (160) respondents for the study (See Table 1). Primary data were obtained with the aid of structured questionnaire, and analyzed using descriptive and inferential statistics such as frequency, percentages, means, standard deviation and ordinary least square regression.

Table 1: Sample size distribution of rural households in the study area

Senatorial zone	Local government area	Communities	Number sampled
Abia Central	Osisioma	Amauzu	10
		Uratta-Amaekpu	10
		Mgboko Umuette	10
		Umuara	10
Sub-total			40
	Ikwuano	Ndoro	10
		Ogbuebule	10
		Ekebedi	10
		Ariam	10
Sub-total			40
Abia South	Ukwa west	Igiri ukwu	10
		Isi Etitioha	10
		Umuokpara	10
		Ipu West	10

Sub-total		40
	Ugwunagbo	10
	Ihie	10
	Asa-Umunka	10
	Asa Nnentu	10
	Umugo	10
Sub-total		40
Grand total		160

Model Specification

To determine the frequency of usage of selected diaper brands among rural households was realized using a Likert scale of; very frequent = 5; frequent = 4; occasional = 3; rarely = 2 and not frequent = 1. In using the Likert scale, a mid-point was obtained by adding 5, 4, 3, 2 and 1 which gave 15 and when divided by 5 gave a mean score of 3.0. It was considered necessary to further categorize the frequency of diaper usage among rural households. For the purpose of decision making, the maximum weighted score of 5 was further divided by 3 to obtain the class interval of 1.67. Thus the class interval (1.67) was successively deducted from the maximum mean score (5) to obtain the three categories of diaper usage. As a result, class ranges for the three categories of diaper usage emerged as follows; 0.00 – 1.66 = not frequent; 1.67 – 3.33 = occasional; and 3.34 – 5.00 = frequent.

The hypothesis testing for the significant relationship between selected socio-economic characteristics of rural households and their frequency of usage of selected diaper brands in the study area was estimated using ordinary least square regression analysis.

The Ordinary least square (OLS) regression model is expressed implicitly as;

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8, X_9) \dots \dots \dots (1)$$

The four functional forms of OLS in explicit form are specified as;

Linear function

$$Y = \beta + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \dots \beta_n X_n + e_i$$

Exponential function

$$\text{Log} Y = \beta + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 \dots \beta_n X_n + e_i$$

Semi-log function

$$Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 \dots \beta_n \ln X_n + e_i$$

Double log function

$$\text{Log} Y = \beta_0 + \beta_1 \ln X_1 + \beta_2 \ln X_2 + \beta_3 \ln X_3 + \beta_4 \ln X_4 + \beta_5 \ln X_5 \dots \beta_n \ln X_n + e_i$$

Where,

Y = Frequency of usage of diaper brands (mean score)

X₁ = Age (number in years)

X₂ = Sex (male = 1; female = 0)

X₃ = Level of education (years of schooling)

X₄ = Marital status (married = 1; otherwise = 0)

X₅ = Household size (number of persons living in a household)

X₆ = Estimated annual income (₦)

X₇ = Membership of social organizations (measured in level of participation; always = 4, often = 3, rarely = 2 and never = 1)

X₈ = Frequency of extension contact (number of extension visits)

X₉ = Occupation (farming = 1, trading = 2, artisan = 3, formal occupation = 4 and unemployed = 5)

e_i = error term.

The choice of the lead equation was determined by the magnitude of the coefficient of the multiple determination (R²), number of significant variables, level of significance and the sign of the significant variables as they conformed to *a priori* expectation.

III. RESULTS AND DISCUSSION

Objective 1: Describe the socio-economic characteristics of respondents.

Table 2 revealed that the majority (43.1%) of the respondents in the study area were within the age bracket of 31-40 years, while 38.1% were within the age bracket of 41-50 years. The mean age of the respondents in the study area was 43 years. This implies that the majority of the respondents in the study area were still in their active age and could influence their usage of diaper brands in their households. This finding is in agreement with Mbindyo (2022) who reported that the majority (59.3%) of sampled respondents were within the age bracket of 31-40 years. The results also showed that the majority (79.4%) of the

respondents in the study area were females while 20.6% were males. This is a clear indication that females are more involved in the use of diapers than males in the study area. This finding is in consonance with Eshitemi *et al.* (2023) who reported that the majority (93.1%) of sampled caregivers were females while 6.9% were males. Table 2 further showed that 47.5% of the respondents in the study area had secondary education, while 20.0% of them had tertiary education. This implies that there was relatively high level of literacy among the respondents in the study area. High level of literacy could also influence rural households' usage of diapers in the study area. Educated individuals and households are thus better positioned to make good choices on the diaper brands that are compatible

with their caregiving needs. This finding is in consonance with Okotto-Okotto, Asamoah, ThomasPossee, Dzodzomenyo, Hornuvo, Okotto and Wright (2024) who reported that the majority (69.5%) of sampled respondents in their study were educated. Table 2 also showed that the majority (53.1%) of the respondents in the study area had a household size of 6-10 persons, while 23.1% of them had a household size of 1-5 persons. The mean household size of the respondents in the study area was 5 persons per household, implying that the respondents had relatively large household sizes. Large household sizes could also influence the frequency of usage of diapers in the study area.

Table 2: Distribution of respondents according to their socioeconomic characteristics

Socioeconomic characteristics	Frequency (n = 160)	Percentage (%)	Mean $\pm$ SD
Age (years)			
21-30	5	3.1	
31-40	69	43.1	
41-50	61	38.1	
51-60	18	11.3	
61-70	7	4.4	43 $\pm$ 9.486
Sex			
Male	33	20.6	
Female	127	79.4	
Marital status			
Single	28	17.5	
Married	122	76.2	
Widowed	7	4.4	
Divorced	3	1.9	
Household size (number of persons)			
1-5	37	23.1	
6-10	85	53.1	
≥ 10	38	23.8	5 $\pm$ 2.5058
Level of education (years)			
No formal education	25	15.6	
Primary education	19	11.9	
Secondary education	76	47.5	
Tertiary education	32	20.0	
Adult education	8	5.0	12 $\pm$ 2.143
Estimated annual income (₦)			
≤ 100000	18	11.3	
100001-500000	53	33.1	

500001-1000000	64	40.0	
≥ 1000000	25	15.6	513536.25 ± 495609.07
Membership of social organization			
Always	40	25.0	
Often	34	21.3	
Rarely	46	28.7	
Never	40	25.0	
Frequency of extension contact (no of visits)			
0 – 3	107	66.9	
4 – 7	53	33.1	3 ± 1.619
Occupation			
Farming	38	23.7	
Trading	65	40.6	
Artisanship	22	13.8	
Formal occupation	19	11.9	
Unemployed	16	10.0	
Religion			
Christianity	140	87.5	
Islam	9	5.6	
Traditional	11	6.9	

Source: Computed from field survey data, 2025

Objective 2: Determine the frequency of usage of selected diaper brands among rural households in the study area.

For baby diapers, the results in Table 3 revealed that rural households in the study area frequently used Soft care ($\bar{x}$ = 4.22) and Kiss kids ($\bar{x}$ = 4.03), while they occasionally used Good fit ($\bar{x}$ = 3.06), Unbranded ($\bar{x}$ = 3.02), Maya ($\bar{x}$ = 2.91), Yara ($\bar{x}$ = 2.74), Veesper ($\bar{x}$ = 2.68), Molfix ($\bar{x}$ = 2.60) and Cloth diaper ($\bar{x}$ = 2.55). This implies that rural households frequently used disposable baby diapers in the study area. The frequency of usage of diaper brands among rural households may be influenced by their perceived attributes such as cost, quantity, quality and compatibility

with the health care needs of their households. This finding is in tandem with Collins *et al.* (2022) who reported that the majority (69.7%) of sampled respondents used disposable diapers while 0.7% used cloth diaper. For adult diapers, the results showed that rural households occasionally used Dr Brown's ($\bar{x}$ = 2.64), Dry love ($\bar{x}$ = 2.44), Angels ($\bar{x}$ = 2.38) and Adult Select ($\bar{x}$ = 2.20). The grand mean score of 2.09 also revealed that rural households occasionally used adult diapers in the study area. This finding agrees with Mbindyo (2022) who reported the occasional usage of Pampers (29.1%), Molfix (26.7%), Soft care (17.4%) and Kiss kids (9.3%) among sampled respondents in Nairobi.

Table 3: Distribution of respondents according to their frequency of usage of selected diaper brands

S/N	Diaper Brand	Very frequent	Frequent	Occasionally	Rarely	Not frequent	$\bar{x}$	SD	Remarks
Baby diapers									
1	Kiss kids	64(40.0)	63(39.4)	18(11.3)	4(2.5)	11(6.9)	4.03	1.11	Frequent
2	Tozzie	6(3.8)	21(13.1)	48(30.0)	27(16.9)	58(36.3)	2.31	1.20	Occasional
3	Soft care	90(56.3)	35(21.9)	21(13.1)	8(5.0)	6(3.8)	4.22	1.09	Frequent

4	Veesper	18(11.3)	20(12.5)	51(31.9)	34(21.3)	37(23.1)	2.68	1.27	Occasional
5	Maya	24(15.0)	28(17.5)	48(30.0)	30(18.8)	30(18.8)	2.91	1.31	Occasional
6	Yara	16(10.0)	30(18.8)	45(28.1)	35(21.9)	34(21.3)	2.74	1.27	Occasional
7	Molfix	23(14.4)	20(12.5)	36(22.5)	32(20.0)	49(30.6)	2.60	1.41	Occasional
8	Virony	17(10.6)	33(20.6)	28(17.5)	23(14.4)	59(36.9)	2.54	1.43	Occasional
9	Good fit	17(10.6)	42(26.3)	57(35.6)	22(13.8)	22(13.8)	3.06	1.17	Occasional
10	Lebrace	6(3.8)	19(11.9)	39(24.4)	36(22.5)	60(37.5)	2.22	1.18	Occasional
11	Unbranded	20(12.5)	32(20.0)	58(36.3)	31(19.4)	19(11.9)	3.02	1.17	Occasional
12	Cloth diaper	11(6.9)	19(11.9)	51(31.9)	45(28.1)	34(21.3)	2.55	1.15	Occasional
Group mean							2.91	1.23	Occasional
Adult diapers									
13	Tozzie	9(5.6)	18(11.3)	23(14.4)	24(15.0)	86(53.8)	2.00	1.28	Occasional
14	Dr Brown's	24(15.0)	39(24.4)	21(13.1)	7(4.4)	69(43.1)	2.64	1.58	Occasional
15	Angels	22(13.8)	26(16.3)	19(11.9)	17(10.6)	76(47.5)	2.38	1.53	Occasional
16	Dry love	21(13.1)	33(20.6)	19(11.9)	9(5.6)	78(48.8)	2.44	1.56	Occasional
17	Adult select	15(9.4)	23(14.4)	25(15.6)	13(8.1)	84(52.5)	2.20	1.44	Occasional
18	Comfort	14(8.8)	29(18.1)	18(11.3)	7(4.4)	92(57.5)	2.16	1.48	Occasional
19	Unbranded	7(4.4)	13(8.1)	30(18.8)	20(12.5)	90(56.3)	1.92	1.21	Occasional
20	Cloth diaper	8(5.0)	11(6.9)	23(14.4)	39(24.4)	79(49.4)	1.94	1.16	Occasional
21	Rags	2(1.3)	1(0.6)	2(1.3)	12(7.5)	143(89.4)	1.17	0.60	Not frequent
Group mean							2.09	1.32	Occasional
Grand mean score							2.50	1.28	Occasional

Source: Computed from field survey data, 2025

Note: figures in parenthesis = percentages; figures outside parenthesis = frequency; $\bar{x}$ = Mean responses; SD = Standard deviation

0.00 – 1.66 = not frequent; 1.67 – 3.33 = occasional; and 3.34 – 5.00 = frequent usage.

Hypothesis: Test for significant relationship between selected socio-economic characteristics of rural households and their frequency of usage of diaper brands in the study area.

The results in Table 4 revealed that the coefficient of level of education (2.829***) was significant at 1% and positively related to the frequency of usage of baby diaper brands among rural households in the study area. This implies that as the educational level of rural households increases, the frequency of usage of baby diaper brands increases. High literacy levels of rural households could enhance their knowledge and usage of diapers in the study area. This result is in agreement with Jessy (2024) who reported a significant relationship between level of education and usage of diapers among sampled mothers at

5% level of significance. The coefficient of estimated annual income (2.244**) was also significant at 5% and positively related to the frequency of usage of baby diapers among rural households. This implies that as the income of rural households increases, their frequency of usage of baby diapers also increases. Increased income of rural households would enable them to afford the cost of diapers usage. Jackulin and Sethuraman (2022) reported a direct relationship between income and consumer willingness to pay for a product or service.

For adult diapers, the coefficient of estimated annual income (2.604**) was significant at 5% and positively related to the frequency of usage among rural households. This implies that an increase in the income of rural households results in a corresponding increase in their

frequency of usage of adult diapers in the study area. Increased income of rural households is expected to help in cushioning the effect of high costs of diapers usage. This finding agrees with Asamoah *et al.* (2025) who reported a higher usage of diapers in high income households in comparison to poor households. The coefficient of extension contact (2.914***) was also significant at 1% and

positively related to the frequency of usage of adult diapers among rural households in the study area. This implies that an increase in extension contact leads to a corresponding increase in the frequency of usage of adult diapers among rural households. Increased extension contact can enhance rural households' knowledge and usage of diapers for improved well-being.

Table 4: Ordinary Least Square (OLS) multiple regression result of the significant relationship between selected socio-economic characteristics of rural households and their frequency of usage of selected diaper brands in the study area

Variable	Baby Diapers				Adult Diapers			
	Linear	Exponential	Double-log+	Semi-log	Linear	Exponential	Double-log	Semi-log+
Constant	2.373 (7.302)***	0.864 (7.666)***	0.798 (3.010)***	2.155 (2.813)***	1.236 (2.339)**	0.248 (0.925)	0.303 (0.245)	-0.185 (-0.296)
Age	0.002 (0.283)	0.001 (0.048)	-0.004 (-0.060)	0.009 (0.041)	0.006 (0.568)	0.002 (0.384)	0.230 (0.682)	0.102 (0.600)
Sex	-0.154 (-1.231)	0.055 (1.863)*	-0.043 (1.809)*	-0.125 (-1.011)	-0.164 (-0.809)	-0.078 (-0.760)	-0.152 (-1.764)*	0.070 (2.402)**
Marital status	0.099 (0.883)	0.021 (0.258)	0.028 (0.483)	0.054 (0.319)	-0.148 (-0.263)	0.018 (1.891)*	0.233 (0.855)	0.119 (0.867)
Level of education	0.198 (4.307)***	0.064 (3.991)***	0.138 (2.829)***	0.422 (2.984)***	0.335 (4.472)***	0.154 (4.050)***	0.859 (3.771)***	0.386 (3.353)***
Household size	0.022 (0.973)	0.010 (1.758)*	0.025 (2.157)**	0.042 (0.407)	-0.070 (-1.909)*	-0.034 (-1.823)*	-0.317 (-1.901)	0.167 (1.986)*
Estimated annual income	1.27E-8 (0.122)	1.908E-7 (0.727)	0.006 (2.244)**	0.018 (2.213)**	-2.201E-8 (-0.130)	1.698E-8 (0.198)	0.031 (2.318)**	0.018 (2.604)**
Frequency of extension contact	0.066 (2.384)**	0.023 (2.461)***	0.101 (3.334)***	0.287 (3.292)***	-0.012 (0.274)	0.060 (2.630)**	0.414 (2.942)***	0.207 (2.914)***
Membership of social organization	-0.027 (-0.568)	0.013 (0.828)	-0.027 (-0.794)	0.047 (0.483)	0.112 (2.508)**	-0.019 (-0.492)	0.129 (0.818)	-0.085 (1.063)
Occupation	0.073 (2.029)**	0.003 (1.813)*	0.051 (2.582)**	0.142 (2.150)**	0.071 (1.103)	0.037 (1.744)*	0.059 (0.391)	0.030 (0.388)
R ²	0.542	0.509	0.512	0.448	0.485	0.470	0.519	0.523
Adjusted R ²	0.478	0.483	0.496	0.429	0.452	0.449	0.487	0.502
F-statistic	3.063***	4.339***	5.825***	4.066***	5.126***	4.720***	5.932***	6.142***

Source: Computed from field survey data, 2025

Note: ***, **, and * indicate statistically significant at 1%, 5% and 10% levels of significance respectively. + = Lead equation

Decision: Ho rejected.

IV. CONCLUSION AND RECOMMENDATIONS

Based on the findings of this study, the study therefore concluded that rural households occasionally used majority of the selected baby and adult diapers in the study area. However, Soft care and Kiss kids baby diapers were

frequently used by rural households. Socioeconomic characteristics such as level of education, household size, estimated annual income and frequency of extension contact significantly influenced the frequency of usage of baby and adult diapers among rural households in the study area. The findings of the study thus empirically establish the

frequency of usage of selected diaper brands among rural households in the study area. Community health extension workers would be better informed about the extent of usage of diaper brands which will serve as a guide for recommendations to be made to rural households in the study area. Therefore, it recommended that:

1. There is need for extension agencies through the community health extension workers to intensify efforts in increasing the frequency of extension visits to rural households in the study area in order to assist them in making informed decisions on their usage of diaper brands. This is due to the fact that rural households generally had poor contact with extension agents in the study area.
2. Entrepreneurs while taking into cognizance the socio-economic characteristics of rural households that influenced their usage of diaper brands are encouraged to look into diaper production and marketing as a way of increasing the availability and usage of diapers among rural households as well as generating income.

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