Abstract

One of the strategies of reducing maternal and infant mortality is through achievement of universal use of health facilities for delivery by women. Thus, this study's objective is to investigate the socio-demographic factors associated with place of delivery of child in Namibia. This study used data from the 2013 Namibia Demographic and Health Survey. Descriptive, bivariate and multivariate analysis was used to assess patterns on the use of health facility for delivery**.** Eighty nine (89) percent of women reported to have used a health facility for delivery of their last child. At multivariate level, women education, place of residence and wealth index were predictors of place of delivery. Education and wealth seem to be important predictors of place of delivery in Namibia. Policy programs in Namibia should emphasize the need for women empowerment through increasing proportion of women with secondary or higher as well as to reduce poverty in Namibia.

Introduction

Maternal mortality is a very useful indicators of any country's health status. Due to this it has received both national and international devotion and guarantee of resources, high maternal mortality remains a nagging problem. Globally especially in developing world's pregnancy and childbirth related complications backed a significant number of pregnancy and childbirth related deaths. (Ogolla, 2015) . Every day in 2015, almost 830 women died as results of pregnancy and child birth complication. (United Population Fund, 2016). Nearly all of these deaths happened in low-resource settings, and most could have been prevented (Marshall, 2013). Of the 830 day-to-day maternal deaths, 730 take places in developing countries, 550 in sub-Saharan Africa and 180 in Southern Asia, as to 5 in developed countries. This point is further highlighted by the facts the probability that a 15 year old woman will eventually die from a maternal cause – is 1 in 4900 in developed countries, versus 1 in 180 in developing countries. In countries designated as fragile states, the risk is 1 in 54; showing the consequences from breakdowns in health (WHO, 2015)

World-wide 5.9 million children below 5 years died in 2015 resulting in 16000 death daily (WHO, 2016), Of which, 75% of all under-five deaths occurred before first year of life . The danger of a child dying before concluding the year of life in the WHO African Region is over five times higher than that in the WHO European Region Wider gap between rich and poor, urban and rural areas are both between countries and within them is determined by maternal death. (WHO, 2016)

Major causes are extended labor, complications from unsafe abortion, hemorrhage, malaria during pregnancy and anemia are the major causes of these deaths, of which 20% of total are of unintended causes. They include pre-existing diseases that are complicated due to pregnancy (Alvarez, 2009). One of the Sustainable development goal is to reduce the global maternal mortality to less than 70 per 100 000 live birth in 2030. (Renwick, 2015). Such causes can only be addressed through use of skilled health personnel in a modern health facility

(biomedical setting) (Ravi & Ravishankar, 2014) in almost countries where health profession attend more than 80% of deliveries MMR are below 200 per 100 000 live birth hence (Tesfaye & Gebi, 2014)

Namibia has significant success in use of health facility for delivery (87% (NDHS, 2013)) but universal coverage still dodges authorities (SDG achievement challenge). In effort to increase health facility delivery and thereby, safety of birth process for mothers and their infant, WHO, in partnership with the Namibian Ministry of Health and Social Services and the European Union, launched the Programme for Accelerating the Reduction of Maternal and Child Mortality (WHO, 2016). Despite this success, Namibia's MMR has almost doubled since 2000 (John, 2016) 271 in 2000 to 385 in 2013 despite an increase in health facility delivery (NDHS 2000&2013). The inability of Namibia to achieve universal coverage on use of health facility for delivery provides a unique challenge. A number of studies examine factors associated with place of delivery elsewhere in the world. Little or no study had been conducted in Namibia, hence the need for more information on determinants of use of place of delivery of a child.
Extensive study bad being conducted to size factors manipulating choice for place of delivery and the following were found to influence mother's choice per study conducted. Age, residence, occupation and education level (Envuladu, Agbo, Lassa, Kigbu, & Zoakah, 2013). Occupational and educational status of the husbands as well as with distance from the nearby health centres, family size, parity, and ANC visit during the last pregnancy. (Amano, Gebeyehu, & Birhanu, 2012). The husbands as well as with distance from the nearby health centres, family size, parity, and ANC visit during the last pregnancy (Amano, Gebeyehu, & Birhanu, 2012). Education and household status relate strongly with place of delivery. (John, 2016)

Statement of the Problem

Every day, about 1000 women die from avertible causes linked to pregnancy and childbirth. Of which, 990 of all maternal deaths occur in developing countries and more than 495 in sub-Saharan Africa. In Namibia the maternal mortality ratio is 265 deaths per 100 000 live births (WHO, 2016). All the death could be prevented if women opt for the right place of delivery. The universal use of health facility and attendant by skilled birth attend are the determinants for reducing infant and maternal mortality (Wanzahun, et al., 2016). In Namibia a proportion of 88.2% were attended by skilled birth assistant. In almost countries where health profession attend more than 80% of deliveries MMR are below 200 per 100 000 live birth. There had been an increase in level of utilizing health facilities but maternal mortality ratio is still high in Namibia. A decrease is experienced in 2013 NDHS as compare to 2006/7 NDHS but an increase as was recognized compared to 2000 and 1992 NDHS. Despite a decrease in MMR as shown by (WHO, 2016) statistics, Namibia still had a long way before as MMR is targeted by nation through the sustainable development goal to be lower than 70 deaths per 100 000 live births. If this problem is not addressed it will impact economic growth such as poverty and gender inequality and loss of GDP. Namibia experienced $79m annual economic loss due to maternal

(Joses M & Oluwole, 2006). Thus it is very important to carry this research to investigate factors associated with place of delivery. This research will benefit Namibia as it finding will guide policy maker in coming with the best policy which will lower the maternal mortality ratio. The results of this research will help in archiving SDG'S

Data and Methods

The following chapter explains the methods used as attempt to explain the sources of data, the sample design, variables data analysis as well as the limitation of the study

STUDY AREA

The study was conducted in Namibia. Namibia is a country in south-western Africa that covering about 824,000 square kilometres. It is bordered by the Atlantic Ocean in the west, Angola and Zambia in the north, Botswana in the east and South Africa in the south-east. . The population is estimated to be 2.303 million in 2013. The capital city is Windhoek. It had 13 administrative regions and the official languages are English and Afrikaans.

STUDY SETTING AND SOURCE OF DATA

In the year 2013 Namibia conducted demographic health survey. Data from this survey is being used to conduct a current research, implying that this research is based on secondary data. The study covered people aged between 15-49years. This study took in to account that place of delivery is a determinants for maternal and infant mortality.

THE SAMPLE DESIGN

A total of 9176 individuals were successfully interviewed in a total of 13 administrative regions in Namibia. Of the 9176 respondents, 2043 (22.3%) were women who reported to have ever had child in the last 5 years and this forms the sample for the study A total of 2043 respondent aged between 15 years and 49 years constituted the study sample. The sample were archived by first selecting case (female) then the variable from these data was recording a variable (total number of children) into two categories. Those with number of children 1-13 it was assign a value 1 and labeled yes those with no child whom responded with a zero was assign new label no, value 2. Respondent who had childbirth longer than three years to the survey and those who never had childbirth experience were dropped from the analysis for these study

MEASUREMENT OF VARIABLE

DEPENDENT VARIABLE

Place of delivery

In attempt to measure the statistics on place of delivery the variable was divided into two categories: health facility and outside health facility. Health facility is places that provide health care. They include hospitals, clinics, outpatient care canters, and specialized care canters, such as birthing canters and psychiatric care canters. Outside health facility is a dwelling-place used as a permanent or semi-permanent residence for an individual, family, household or several families in a tribe. A homestead also includes agricultural land

Independent variable

SOCIO-DEMOGRAPHIC VARIABLE

Description of variable

Age- number of completed years calculated from last celebrated birthday. The age of respondent were stated in single years. The ages were then recorded into three groups namely teenagers (15-19 age group), youth (20-34) age group and adults (35-49).

Highest education level- the level at which the respondent attain. The respondents were asked the highest level of school they had attended. There were four possible answers to pick one of any which were none, primary, secondary and tertiary/higher. The four choices were then recorded into two. Secondary and higher put together then primary and none resulting in none/primary and secondary/higher.

Wealth index- The wealth index is a composite measure of a household's cumulative living standard. Generated with a statistical procedure known as principal components analysis, the wealth index places individual households on a continuous scale of relative wealth. The variable separates all interviewed households into five wealth quintiles to compare the influence of wealth on place of delivery. From the data set of Namibia 2013 wealth index was in five categories poor poorest, middle rich, and richest, which was then recorded into three classes leaving middle class as it is and combining rich and richest to rich then poor and poorest to poor.

Region is large, usually continuous segment of a surface or space. The thirteen Namibian regions were recorded into new categories which are the four carnal point .South encompasses of Hardap, Karas and khomas, North (Ohangwena, Oshikoto, Otjozondjupa), East (Omakheke, Captiva and kiang) and West (Eryngo, Kanene, Ochana and Omusati). These cardinal regions were archived by just looking at the Namibia map and put each region where it situated in terms of cardinal point.

Religion is a cultural system of behaviours and practices, world views, ethics, and social organisation that relate humanity to an order of existence. There were 6types of religion from the original dataset The 6 religion were classified into two categories the recorded as Christian

and other religion. Christian encompasses of roman, Elcin, prostent and Seventh - day Adventist while other religion includes no religion and other

Parity is total number of children born alive to a woman. Women had a number of children ranges from 0 to 13. As women who had never experience child birth were removed the study left with 1 to 13. These string single number we recorded into three groups of which the first entails of 1 and 2(1 to 2), second the with 3and 4(3 to 4) and the last with 5, 6,7,8,9,10,11,12 and 13 to (5+) or above 5

Marital status-is the marital status is the civil status of each individual in relation to the marriage laws or customs of the country, i.e. never married, married, widowed and not remarried, divorced and not remarried, married but legally separated, de facto union. The variable was in 6 categories. The variable was then recorded into three categories married as it was, never married (never in union, living with partner) and formerly married (widowed, divorced and no longer living together/separated).

Occupation is a person's usual or principal work or business, especially as a means of earning a living.

Place of residence is the civil subdivision of a country (district, county, municipality, province, department, state) in which the individual resides. The variable was used as it was from data set with two categories rural and urban

Statistical approach

Data was analysed by means of descriptive analysis of frequency and cross tabulation to see the distribution of responders by variables (age parity, occupation, religion, region, highest education level marital status ad wealth index. The bivariate regression and chi square were used to determine the effects of independent variable and dependent variable(place of delivery) a chi square with confidence level of (95%) were used to measure the relationship within independent variables. A multivariate logistic regression with four models was used to measure the likelihood of utilising non institutional health facility and institutional health facilities using odds ratio with 95% confidence interval. Model 1 is univariate whereas model 2 includes socioeconomic variables only. Model 3 introduce demographic variables whereas the last model (model 4) includes all the explanatory socio economics and demographic variables. The reference category is institutional delivery and the last category of independent variable was set to zero. All the results from analysis were presented in forms of a tables.

Results

Background Characteristics of Respondents

Table 1 describes women by socio demographic characteristics. The table shows that a total of 2043 women reported to ever given birth or had childbirth experience during the last 5 years preceding the. Of which all the respondent were female since the study is sex specific. The finding reveal that in Namibia the largest reproductive group in the study sample was 20-34 years (68%) followed by 35-49 years and 15-19 years with, 7.7% and 23.3%respectively. Majority of women by regional distribution where from west (31.1%) while 20.2% of women were from south, 24.6% from north and 24.1% from east. Above 50% of respondent reside in rural areas (51.5%). Almost all (90.5%) of the respondent are Christians and only 9.2% mothers are of other religion. Women whom participated in this study 73.8% had a secondary/ highest as their highest level of education. The poor females (39.6%) are 8.1 % more than the female who are rich and the rest (35%) belong to middle category. About a third quarter (78.6%) of respondent had never being in a legal union whereas 15% and 13.9% had being. Eighty-nine per cent of birth takes place in health facility compared to 11% of non-institutional delivery

Table 1 shows respondent who had ever given birth during the last 5 years preceding the study (N=2043)

INDIVIDUAL & HOUSEHOLD CHARACTERS	***CATEGORIES***	***FREQUENCY***	***PERCENT***
TOTAL	Female	2043	100

AGE	15 to 19	159	7.7
	20 to 34	1401	68.6
	35 to 49	484	23.7
REGION	South	412	20.2
	North	503	24.6
	East	493	24.1
	West	465	31.1
TYPES OF RESIDENCE	Urban	991	48.5
	Rural	1052	51.5
RELIGION	Christian	1849	90.5
	No religion	194	9.5
HIGHEST EDUCATIONAL LEVEL	None/primary	536	26.2
	Secondary/higher	1507	73.8
RESPONDENT OCCUPATION	Working	961	47.0
	Not working	1082	53.0
WEALTH INDEX	Poor	880	43.1
	Middle	447	21.9
	Rich	716	35
MARITAL STATUS	Married	279	13.7
	Never married	1605	78.6
	Formerly married	159	7.8
PARITY	1 to 2	1211	59.3
	3 to 4	544	29.6
	5+	288	14.1
PLACE OF DELIVERY	Outside health facilities	225	11.0
	Health facilities	1818	89.0

Bivariate Analysis

A total number of 2043 women reported to ever had given a birth. All variables were significantly associated with place of delivery at bivariate analysis except marital status. Only 12% of teenagers (15-19 years) used non health facility as place of delivery for their child as oppose to 90.6%of youth (20-34 years)who delivered their child in health facility and 85.2% of adults (34-49 years)whom as delivered in health facility. Religions seem to have a slight different for those with no religion as there was 2.8% different in terms of home and health

delivery (81.4%). Almost 90% of Christians (89.9) delivered in health facility and just over 20% of women whom belongs to other delivered at home. Majority of women with education status none delivered at home as compared to 24.2%, 5.5% and 0% of primary, secondary and tertiary respectively. All women with tertiary education deliver child at health facility. Almost 100% of rich (97.1%) respondent delivered their child in health facility while 90.5% of middle wealth index delivered in health facility compared to 18.45 of the poor whom delivered at home. Being poor are a contributing factor to a home delivery. The ability to read and inability to read did not show any great variation in influencing place of delivery as they had 73.6% and 75.7% of cannot read and can read respectively of a health delivery. Out of 227 deliveries that occurred at home 19% were married women whereas 9.3 and 16.4 were never married and widow/separated/divorced respectively. A total number of 2037 women delivered in health facility of which 95.1% whereas 83.5%, 87% and 91% were of east, west and north respectively. Women who deliver most in health facility in respect to residence are the one who reside in urban (96.1%).

Table 1: Distribution of women on utilization of health facilities from last 5 years preceding the study by selected background characteristics (socio-demographic)

BACKGROUND CHARACTERISTICS		*FREQUENCY*	*PERCENTAGE*
*AGE****	15-19	146	92.4
	20 to 34	1273	90.9
	35 to 49	399	82.4
*RELIGION****	Christian	1667	90.2
	No religion	18	50.0

	Other	127	84.1
*HIGHEST EDUCATION*** LEVEL*	None/primary	388	72.4
	Secondary/higher	1430	94.9
OCCUPATION	Working	899	93.5
	Not working	919	89.9
*WEALTH INDEX****	POOR	719	81.7
	Middle	402	89.9
	Rich	697	97.3
MARITAL STATUS	Married	226	81.0
	Never married	1460	91.0
	Widow/separated/divorced	132	83..0
*REGION****	South	394	95.6
	East	412	83.6
	West	554	87.2
	North	458	91.1
*TYPE OF RESIDENCE****	Urban	950	95.9
	Rural	868	82.5
PARITY	1 to 2	1616	92.1
	3 to 4	199	70.6

***p<0.005

other religion-any religion except Christians found in Namibia

Multivariate Analysis

Model 1 displays factors socio-demographic factors predicting health facility (HF) deliveries that were considered by univariate logistic regression analysis. All variables considered at the Mothers age, education, wealth index, marital status, parity, respondent, region occupation and residence were significantly associated with utilization of health facilities. Women aged 15 to 19 and 20 to 34 were both about 3 and 2 times more likely to deliver health facilities compared to those aged 35 to 39 years? Women from south region were about 3 times more likely to deliver facilities as compared to those of west region. Women who reside in urban areas were approximately 4 times more likely to deliver more likely to utilize health facilities as compared to women of other religion. Women in poor wealth index were roughly 8 times less likely to deliver in HF as compared to the women in rich quintile. Never married women were just 2 times more likely to utilise health facilities as compared to the formerly married women. Working women were roughly 3 times more likely to deliver in health facilities as compared to women who were not working. Women with their total number of children fall within range 1 to 2 and 3 to 4 were about 7 and 3 times respectively more likely to deliver in health facilities as compared to women of 5+ as total number of children.

Model 2 present's socio-economic factors associated health facilities for delivery in Namibia. Both variables occupation of respondent, wealth index and highest educational level were significantly associated with non-institutional delivery. Women with none/primary as their highest educational level were nearly 5 times less likely to utilise health facilities for delivery than with secondary or higher. Working women were 2 times more likely to deliver in health facilities as compared to women who are not working. Poor and middle economic women were almost 3 times less likely to utilise health facilities as compared to rich women

Model 3 shows the odds ratio of demographic factors (women age, region, residence, religion, parity and marital status) against place of delivery in Namibia .Women who reside in urban areas are almost 4 times more likely to deliver in health facilities as compared to women who reside in rural areas. Christian mothers were almost 3 times more likely to deliver in health facilities as compared to women of other religion. Women who's their total birth range from 1-2 and 2-3 were 6 and 3 times more likely to deliver in health facility than with 5+ .Age, marital status, religion and region were not significant in model 3.

Model 4 displays odds ratio of all explanatory variables' (socio demographic factors) used to measure independent variable considered by multivariate logistic regression analysis. Highest education level, wealth index, parity, residence, occupation and religion were significantly associated with health facilities, whereas mothers age region and marital status were associated with HF. Women who reside in urban areas were about 3 times more likely to deliver in health facilities than women who reside in rural areas. Christian women were about 2 times more likely to deliver in health facilities as compared to women of other religion. Women who had highest education level as none/primary were almost 4 times less

likely to deliver in health facilities as compare to those with secondary or higher. Poor women and middle economic status were almost 2 times less likely to deliver in health facilities as compared to rich women. Working women were 2 times more likely to deliver in health facilities as compared to women who doesn't work. Women whom their total number of children fall within range 1 to 2 and 3 to 4 were about twice more likely to utilise in health facilities as compared to women of 5+chidren.

Table 2: Odds ratio showing individuals likelihood of utilising health facilities for delivery of a child by women aged 15 to 49 during the last five 5 years preceding the survey ***P>0.05

BACKGROUND CHARACTERISTIS	MODEL ONE ODD RATIO	MODEL ONE ODD RATIO	MODEL ONE ODD RATIO	MODEL ONE ODD RATIO
AGE				
15-19	2.952 (1.376-4.883)**		0.790 (0.371-1.685)	1.405 (0.638-3.096)
20-34	2.119 (1.575-2.850)**		0.829 (0.562-1.224)	0.966 (0.644-1.449)
35-49	1		1	1
REGION				
South	3.200 (1.890-5.420)**		1.800(1.024-3.164)**	1.293 (0.716-2.338)
North	1.488 (1.013-2.187)**		1.665 (1.101-2.518)**	1.464 (0.944-2.268)
East	0.744 (0.533-1.038)		0.795 (0.551-1.146)	0.830 (0.563-1.225)
West	1		1	1
RESIDENCE				
Urban	4.192 (3.549-6.976)**		3.944 (2.711-5.739)**	2.783 (1.884-4.200)**
Rural	1		1	1
RELIGION				
Christian	2.608 (1.799-3.783)**		2.526 (1.568-3.850)**	2.192 (1.394-3.446)**
Other	1		1	1
EDUCATION				
None/primary	0.141 (0.105-0.190)**	0.206(0.150-0.281)**		0.258 (0.182-0.365)**
Secondary/higher	1	1		1
WEALTH INDEX				
Poor	0.122 (0.750-0.198)**	0.257 (0.153-0.429)**		0.519 (0.290-0.927)**
Middle	0.244 (0.140-0.422)**	0.320 (0.182-0.561)**		0.453 (0.251-0.817)**
Rich	1	1		1
MARITAL STATUS				
Married	0.872 (0.523-1.454)		1.296 (0.737-2.280)	1.159 (.640-2.098)
Never married	2.060 (1.316-3.223)**		1.495 (0.903-2.475)	1.523 (0.899-2.579)
Formerly married	1		1	1
OCCPATION				
Working	2.575 (1.893-3.494)**	1.702 (1.225-2.366)**		1.504 (1.504-2.145)**
Not working	1	1		1
PARITY				
1 to 2	6.449 (4.572-9.096)**		5.420 (3.459-8.492**	2.146 (1.476-3.690)**
2 to 3	3.193 (2.221-4.590)**		2.702 (1.796-4.065)**	1.582 (1.019-2.458)**
5+	1		1	1

Discussions and Conclusions

No pregnancy should results in the death of neither a mother nor the child. In most sub Saharan countries MMR had being due to birth attended by unskilled birth attendant and failure to archive Sustainable Development Goals. This study was conducted to study factors associated with place of delivery of a child in Namibia. The finding shows that high level of mothers utilizes health facilities for delivery (89%) whereas small proportion utilized outside health facilities (11%). This was influenced by factors which were significant at bivariate and multivariate analysis. Education, residence, religion, occupation parity and wealth index are significantly associated with health facility while. Region, age and marital status have no relationship with place of delivery. Age show a relationship at model one of multinomial regression. The discussion is focuses only on factors which are significant at model four of multivariate logistic regression as it a better fit model.

Education level of a mother was also a determining factor for place of delivery. It was significant at multivariate logistic regression analysis. Mothers with none or primary education were about four times likely to deliver in HF as compared to those with secondary or higher education. This finding compare well with similar studies in Ghana (Nanang & Atabila) and Kenya (Ogolla 2012) the likely explanation for the finding of this study could be because mothers with more years of education are more aware of the importance of delivering in a health care facility. They are also in a better position to appreciate health education messages and act on them. In addition, women with more years of education have high self-confidence and feel comfortable delivering in healthcare facilities (Ogolla, 2015).

Residence also is contributing factor for choice of women place of delivery of a child in Namibia. Mothers who reside in urban areas were about 3 times more likely to deliver in health facilities as compared to those who reside in rural areas. This finding of this study is similar to one conducted in Nepal which find that mothers from remote area were 2.8 times and 2.3 times less likely respectively to utilize health facilities than urban area (Shrestha, 2012) and by (Kitui, Sarah, & Gail, 2013)

Another factor which inflected place of delivery is wealth index which was associated with place of delivery in Namibia is parity. Mother fall in a bracket of poor and middle wealth

quintile were about 2 times less likely to deliver their child in health facilities as compared to rich women. The reason for these results might be that the reaches got money to cover cost in health facility and they are able to cover transport cost unlike the poor and most of rich are concentrated in urban thus it promote health facility delivery A similar results was obtain by (Rjendra Karkee, 2015) and (Ravi & Ravishankar, 2014). It was found not influential by (Chowdhury, 2013) Nepal.

One more influential factor which appeared to influence place of delivers is parity. Mother with total number of 1 to 2 and 3 to 4 were about 2 times more likely to practice health facility delivery as compared to those with 5 and plus. The motive for these result might be that they are youth and aware of risk of not utilising health facility. These results is contradicted by of (Ogolla, 2015) who discovered that first time mothers were five times more likely to give birth at home compare to those with two or more. Additionally parity was found not significant by investigation held in Kenya by (Envuladu, Agbo, Lassa, Kigbu, & Zoakah, 2013).

Another determining socio economic factor was religion. Christian's mothers were 2 times more likely to deliver in health facilities as compared to those whom are of other religion except Christian. This result is possible as Christian encourage child after mirage thus the husband is there to help to make wiser decision concerning place of delivery. The study by Envuladu in Kenya reached the outcome where religion was not associated with place of delivery (Envuladu, Agbo, Lassa, Kigbu, & Zoakah, 2013).

CHARPTER 5: CONCLUSION AND RECOMENDATION

Eighty nine percent of women utilize institutional delivery in Namibia. Residence, occupation parity, education, wealth index and religion are associated with place of delivery in Namibia proceeding the last 5 years of study. Age, region and marital status are not associated with place of delivery in Namibia proceeding the last five years of survey. Education, occupation and wealth are important berries factors for women to utilise health facility while residence, religion, occupation and parity influence positively health facility delivery in Namibia. There is a significant relationship among socio-demographic factors except for marital status. Policy programs in Namibia should emphasize the need for women empowerment through increasing proportion of women with secondary or higher as well as to reduce poverty in

Namibia. They must also adapt the reproductive health policy as Zimbabwe had. Policy programmers in Namibia should emphasise the need for industrialisation thus urbanising more areas through creation of employment this will increase female labour thus reducing fertility and parity will be within brackets that influence institutional delivery.

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