RESEARCH ARTICLE

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Knowledge Attitude and Determinants of Cervical Cancer Screening Uptake Among Age-Eligible Women and Male Partners in Makurdi North-Central Nigeria

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Abstract

Objective: To inform effective intervention strategies, this study aimed to assess the knowledge, attitude, and determinants of cervical cancer screening (CCS) among women and their male partners in Makurdi, North-Central Nigeria. **Method:** A convergent parallel mixed-methods study involving a cross-sectional descriptive study of 288 women aged 25 to 65 years and key informant interviews (KIIs) with 10 women and 10 male partners across five primary health care centers in Makurdi, North-Central Nigeria. Data were collected using an interviewer-guided online questionnaire (KoboToolbox) and a semi-structured interview guide. Quantitative data were analyzed with SPSS version 20 (Armonk, NY: IBM Corporation). Qualitative data were transcribed verbatim and analyzed thematically. **Result:** Participants were primarily traders (41.0%) with secondary education (46.2%) and a monthly income below 30,000 Naira (19.44 USD) (50.7%). Cervical cancer (CC) awareness was low (28.8%), with limited knowledge of HPV vaccination (15.6%). Despite high willingness to screen (94.8%), screening rates were minimal (3.1%). Support for CCS and HPV vaccination was high (94.4% and 92.7%, respectively). Key determinants of CCS uptake included age (≥40 years), family history of CC, and knowledge of HPV vaccination. The key informant interviews corroborated these findings. Poor knowledge of CC and CCS as well as low uptake of CCS were observed among the respondents. They however expressed positive intentions towards CCS. **Conclusion:** The study underscores inadequate knowledge of CC and its prevention, highlighting the necessity for targeted awareness campaigns and enhanced involvement of male partners to boost CCS uptake and reduce cervical cancer incidence among Nigerian women.

Keywords: Knowledge- cervical cancer screening- age-eligible women- male partners- Makurdi

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Introduction

Cervical cancer is a significant public health issue in Sub-Saharan Africa, especially in Nigeria, where low screening rates contribute to high incidence and mortality [1]. It is the fourth most frequently diagnosed cancer and the fourth leading cause of cancer death among women world-wide, with estimated 570,000 new cases, representing 6.6% of all cancers among women globally and 311,000 deaths occurring annually [2–4]. It accounts for 12% of female cancer deaths, of which 85% occurs in low- and middle-income countries (LMICs) [5]. Cervical cancer accounts for 20-25% of all women cancer in Sub-Saharan Africa [6]. It ranks second after breast cancer among all cases of cancer in Nigeria, accounting for 12,075 new cases diagnosed and 7,968 deaths annually [6, 7]. Cervical cancer prevalence of 5-13.9% have been reported by some studies in Nigeria [8–10]. Several risk factors have been found to associated with cervical cancer in Nigeria, these include low social economic status, early marriage, early coitarche, multiple marriage and polygamy, late presentation and early childbirth,

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tobacco smoking, number of sexual partners, use of oral contraceptives, immunosuppression, lack of human papillomavirus (HPV) vaccination, low awareness of CC and Pap smear testing, diabetes, cardiovascular diseases and family history of cervical cancer [9–12].

Presently, cervical cancer screening, vaccination with HPV vaccines, and treatment of the premalignant lesions of the cervix are recognized as the best cost-effective methods for the prevention of cervical cancer globally [13]. Despite the high burden of cervical cancer in Sub-Saharan Africa especially in Nigeria, with an age-standardized incidence rate (ASIR)of 36.0 per 100,000 [7]. There is no organized national programme on cervical cancer prevention as obtained in technologically advanced countries [6, 14]. Only an opportunistic cervical cancer screening in which women are screened during hospital visit for other reasons are available [6, 14]. This has resulted to low screening and treatment uptake of cervical cancer in Nigeria and other low and middle income countries in Sub-Saharan Africa despite the availability of various strategies for the elimination of cervical cancer by WHO, thus the persistently high incidence of the disease [6, 15–17]. In addition, the poor knowledge and low level of awareness of cervical cancer and cervical cancer screening among women and their male partners has resulted in poor uptake of cervical cancer screening and treatment among women and therefore contributes to the increasing burden of the disease [4, 18–20].

To inform effective intervention strategies, this study aimed to assess the knowledge, attitude, and determinants of cervical cancer screening among women and their male partners in Makurdi, North-Central Nigeria.

Materials and Methods

Study Design

This study employed a convergent parallel mixed method approach. The cross-sectional study includes 288 women between the ages of 25 to 65 years who attend clinic at the primary health care (PHC) Centers, while the qualitative study was a key informant interviews (KIIs) with 10 women aged 25-65 years and 10 male partners who accompany their wives or attended the clinic. This study was conducted across five primary health care centers in Makurdi, North-Central Nigeria.

Study population

The study population consist of women between the ages of 25 to 65 years and male partners (married men and single men) who attends clinic at the selected primary health care centers and fulfils the inclusion criteria and consented to be part of the study.

Study sites

The study sites were 5 selected primary health care centers (kwararafa, Wadata, Asase village, Agan, Yaikyo) in Makurdi Local Government Area (LGA) of Benue State Nigeria.

Sample size

The sample size was calculated using the formula for cross-sectional study when parameters are in normal proportion and margin of error of 5% [21]. The prevalence of study participants with knowledge of cervical cancer screening method of 81% from previous study in Abakaliki, Southeast Nigeria was used in calculating the sample size [22]. Using a non-response rate of 10%, the total sample size calculated was 263. The total study participants recruited for this study was 288.

The qualitative interviews (KIIs) consisted of 10 women between the ages of 25-65 years and 10 male partners (married men and single men in a relationship) attending clinic at the selected primary health care centers. These study participants were recruited into the study after obtaining a written informed consent.

Sampling Techniques

The non-probability sampling techniques were used during this study. The 5 study sites (primary health care centers) were selected using purposive sampling technique while the respondents were selected with convenient sampling method.

Data Collection Tools

The quantitative data was collected using an online interviewers guide using KoboToolbox (https://Kf.kobotoolbox.org) , while the qualitative data was collected using an electronic tape recorder and the interviews were conducted using a semi-structured interviewer's guide.

Data Collection

Data was collected simultaneously across the five primary health care centers using 3 trained research assistants. The interviews were conducted by the principal investigator and 3 trained research assistants. All key informant interviews were conduct for each of the study participants in a convenient and private environment ensuring not more than minimum risk during this process. Informed written was obtained from each of the study participants. Data was collected with an electronic tape recorder. Each of the consenting study participants was interviewed using a pretested semi-structured interviewer's guide administered by the trained interviewers. The interview was conducted at periods that do not interfere with the clinic activities. The quantitative data was collected using an online Kobo Collect. An informed written consent was obtained from each of the study participants and each respondent was consecutively recruited until the sample size was achieved.

Data Analysis Procedure

Quantitative data was analyzed with the Statistical Package for Social Sciences (SPSS) software version 20.0 (Armonk, NY: IBM Corporation). Frequencies and percentages were calculated. Variables with p-value less than 0.25 in binary logistic regression analysis was subjected to multivariable logistic regression analysis to control confounders. Odds ratio with 95% confidence interval was used to examine associations between dependent and independent variables. P-value less than 0.05 was considered significant. The qualitative data

recorded will be transcribed verbatim for thematic content analysis. The results were presented in Tables and textual forms.

Ethical Issues

The study adhered to both local and international Good Clinical Practice (GCP) requirements. Ethical approval was sought from Benue State Ministry of Health Research Ethics Committee (MOH/STA/204/1/275).

Results

The sociodemographic characteristics of respondents are shown in Table 1. A large number of the study participants falls within the age group of < 40years 267 (92.7%). The mean age of the respondents was 31.07±5.23. The Tiv ethic group account for majority of the study participants 184 (63.9%). Two hundred and eighty-five (99%) of the respondents were married and 258 (89.6%) of the study participants belong to the Christian religion. Most of the respondents had secondary level of education133(46.2%) and 118 (41%) of the study participants were traders. A large proportion of the respondents had between 1-4 number of children 220 (76.4%) with a median parity of 3.0. One hundred and forty-five of the respondents (50.3%) had their first sexual exposure between the age range of 20-29 years with a mean age of 19.96±3.68. The majority of the study participants were HIV negative 251(87.2%) and they had not used oral contraceptive pills for more than 5 years 277 (96.2%). Nine (3.1%) of the study participants had family history of cervical cancer. The average income per month for most of the study participants were less than 30,000 Naira (19.44USD) with a median income of 15,500 Naira (10.04USD). Majority of the respondents do not smoke or consume tobacco in any form 284 (98.6%) and do not

Table 1. The Sociodemographic Characteristics of Study Participants (N=288)

Variables	Frequency (n)	Percent
Age (in years)		
< 40	267	92.7
≥40	21	7.3
Mean age=31.07±5.23		
Tribe		
Tiv	184	63.9
Idoma	37	12.8
Igede	5	1.7
Hausa	10	3.5
Yoruba	3	1.0
Igbo	17	5.9
Others	32	11.1
Marital Status		
Married	285	99.0
Single	3	1.0
Religion		
Christianity	258	89.6
Islam	30	10.4
Level of education		
No formal education	17	5.9
Primary education	39	13.5
Secondary education	133	46.2
Tertiary education	99	34.4
Occupation		
Trader	118	41.0
Farmer	47	16.3
Professionals	35	12.2
Artisans	21	7.3
Unemployed	42	14.6
Others	25	8.7
Parity (Total number of children delivered)		
0	10	3.5
1-4	220	76.4
>=5	58	20.1
0	10	3.5
Median parity=3.0		
Age at first sexual exposure/intercourse (in years)		
10-19	139	48.3
20-29	145	50.3
30-39	4	1.4
Mean age in years=19.96±3.68		
HIV Status		
Positive	19	6.6
Negative	251	87.2
Not disclosed	18	6.3
Use of oral contraceptive pills for over 5 years		
Yes	11	3.8
No	277	96.2
Family history of cervical cancer		
Yes	9	3.1
No	279	96.9
Average income per month (Naira and USD)		
0	67	23.3
<30,000 (19.44USD)	146	50.7
30,000-60,000 (19.44-38.88USD)	46	16.0
>60,000 (> 38.88USD)	29	10.1
Median income=15500 (10.04USD)		
Do you smoke or consume tobacco in any form?		
Yes	4	1.4
No	284	98.6
Do you consume alcohol?		
Yes	45	15.6
No	243	84.4

consume alcohol 243 (84.4%).

The knowledge of cervical cancer (CC) and cervical cancer prevention among the respondents are shown in the Table 2. Only 83(28.8%) of the respondent had ever heard of cervical cancer with majority of the attributing their source of knowledge to health workers 45 (38.8%). Most of the respondents do not know the risk factors of cervical cancer 258 (82.7%). A large number of the study participants do not know that cervical cancer is caused by human papilloma virus infection 242 (84.0%) and that human papilloma virus infection is sexually transmitted 235 (81.6%). The majority of the study participants do not know that cervical cancer screening can prevent cervical cancer 186 (64.6%) and they do not know the appropriate time for cervical cancer screening 211 (59.9%). One hundred and eighty-five thousand (36.8%) respondents do not know the benefits of CCS. A few numbers of the study participants 45 (15.6%) have ever heard of HPV vaccination.

The thematic analysis and quotes of key informant interviews of women aged 25-65 years and male partners on knowledge/awareness of CC and its prevention corroborate the above findings. All respondents generally showed poor knowledge of cervical cancer and its prevention. Only few have heard about CC. None of the respondents knew that CC is caused by HPV. They perceived CC as fearful. Poor knowledge and uptake of CCS was observed among the female respondents. The male respondents also demonstrated poor knowledge of CCS. However, they all agreed women should screen for CCS.

Quotes

• When I hear the word cancer, I fear. I have not heard about CC and screen for CC. My own is lack of understanding of cancer and what can cause it. (Female respondent.)

• I would be very scared when I heard the world cancer. Yes. I heard about cervical cancer, but I don't have any idea about that. I don't have any idea about what causes it. (female respondent)

• It's really terrifying to me because I've read a little idea about cancer. I've heard about it. And when I look at the devastating effects, I feel terrifying about it. (male partner)

• Yes, I have heard about CC. Just of recent I was hearing campaign about cervical cancer. They even went to children's schools to campaign for that, to educate the girl child, especially the girl child, yes from age 9 to 14 years. It's actually vaccination against cervical cancer. (male partner)

• As I earlier said, I don't have much understanding about CC. I've not heard about this disease before. I don't have much understanding of what causes it. (male partner)

• I've never heard about it at all and I don't know anything that can be done to prevent it. Also, I don't know the cause of it and I don't know also the importance of cervical cancer screening. (male partner).

• I have never heard about human papilloma virus before. (male partner)

The attitude of the respondents towards cervical cancer

Table 2. Knowledge of Cervical Cancer and Cervical Cancer (CC) Prevention among the Study Participants (N=288)

Variables	Frequency (n)	Percent
Have you ever heard of cervical cancer (Knowledge of CC)		
Yes	83	28.8
No	205	71.2
Source of Knowledge	n=*	
Health workers	45	38.8
Friends	13	11.2
Internet	13	11.2
Family	9	7.8
Media	34	29.3
Church	2	1.7
What are the risk factors for CC?	n=*	
Multiple sexual partner	17	5.4
Having a spouse with multiple sexual partner	9	2.9
HPV infection	14	4.5
Early age at sexual exposure	7	2.2
Smoking	7	2.2
I don't know	258	82.7
Do you know that CC is caused by HPV infection?		
Yes	28	9.7
No	18	6.3
I don't know	242	84.0
Do you know that HPV infection is sexually transmitted?		
Yes	28	9.7
No	25	8.7
I don't know	235	81.6
Do you know that CC can be prevented through screening?		
Yes	84	29.2
No	18	6.3
I don't know	186	64.6
When do you think is appropriate to screen for CC?	n=*	
25 years and above	67	19.0
When a family member died of CC	7	2.0
When one has symptoms of CC	33	9.4
When you have sexually transmitted infection (STI)	12	3.4
When one is sexually active	22	6.2
I don't know	211	59.9
What do you think are the benefits of CCS?	n=*	
To know my status	85	16.9
To be safe	55	10.9
Early detection of the disease	43	8.5
Prevention of CC	59	11.7
Early treatment	54	10.7
It reduces complications from CC	12	2.4
It reduces deaths from CC	10	2.0
I don't know	185	36.8
Have you ever heard of HPV vaccination?		
Yes	45	15.6
No	243	84.4

Table 3. Attitude of the Study Participants towards Cervical Cancer Screening (CCS) (N=288)

Variable	Frequency (n)	Percent
Will you be willing to screen for CC?		
Yes	273	94.8
No	11	3.8
I am not sure	4	1.4
Do you need spouse consent to undergo CCS?		
Yes	211	73.3
No	71	24.7
I am not sure	6	2.1
Will you recommend CCS for a friend or family?		
Yes	272	94.4
No	11	3.8
I am not sure	5	1.7
Will you recommend HPV vaccination to friends and family?		
Yes	267	92.7
No	14	4.9
I am not sure	7	2.4

screening (CCS) are shown in Table 3. A vast majority of the respondents are willing to screen for CC 273(94.8%) and 211(73.3%) of them needs consent from their spouse to do so. Most of the respondents were willing to recommend CCS 272(94.4%) and HPV vaccination267(92.7%) to their friends and family.

This finding was supported by the thematic analysis of key informant interviews of women and male partners on attitude towards CCS. The female respondents were all willing to screen for CC if given the opportunity as well as recommend CCS to friends and family members. All the male partners were willing to encourage their spouse, family members and friends to screen for CC.

Table 4. Utilization of Cervical Cancer Screening among the Study Participants (N=288)

Variables	Frequency (n)	Percent
Have you ever screen for CC?		
Yes	9	3.1
No	279	96.9
If yes what method did you use?	n=9	
Pap smear	6	66.7
VIA	1	11.1
I don't know	2	22.2
Have you been vaccinated of HPV?		
Yes	11	3.8
No	277	96.2
Have any of your family member vaccinated/daughters aged 9-14 years		
Yes	7	2.4
No	186	64.6
I don't know	95	33.0

Table 5. Multiple Logistics Regression of Factors that Determine the Utilization of Cervical Cancer Screening

Variable	aOR	95% CI	p-value
Age (in years)			
<40	Reference		
≥40	17.56	1.114-276.939	0.042*
Average income per month (Naira)			
0	Reference		
<30,000 (19.44USD)	0.24	0.023-2.575	0.239
30,000-60,000 (19.44-38.88USD)	0.00	0.000-	0.997
≥60,000 (> 38.88USD)	5.12	0.538-48.768	0.155
Family history of cervical cancer			
Yes	61.39	2.052-1837.29	0.018*
No	Reference		
Do you know that CC is caused by HPV infection?			
Yes	0.53	0.018-15.75	0.714
No	0.00	0.000-687.76	0.386
I don't know	Reference		
Do you know that HPV infection is sexually transmitted?			
Yes	3.406	0.105-110.959	0.491
No	7.209	0.075-694.604	0.397
I don't know	Reference		
Do you know that CC can be prevented through screening?"			
Yes	3.305	0.259-42.177	0.357
No	0.000	0.000-	0.998
I don't know	Reference		
Have you heard of HPVvaccination?			
Yes	37.821	2.587-552.962	0.008*
No	Reference		

Note: *p-value <0.05, Omnibus Tests χ^2, 44.397; df, 12; p, 0.000; Hosmer and Lemeshow Test; χ^2, 0.477; p, 1.000; Nagelkerke R^2, 0.588

Quotes

• I have never screened for CC but I am will if I have the opportunity and recommend it for family and friends. (Female respondents).

• If it's something everybody do, why not? I will encourage her to do CCS. (male partner)

• I have never encouraged my wife to screen for cervical cancer. But I am willing to recommend cervical screening for your wife, family, or friends. (male partner)

• I have not encouraged my wife to screen for CC, since I don't have knowledge about it. But I am willing to recommend CCS for your wife, family members and friends. (male partner)

The utilization of CCS among the respondents are shown in Table 4. Only 9(3.1) of the respondents have ever screen for CC and of those who screened previously, 6(66.7%) used Pap smear as a method of CCS. Very few respondents had been vaccinated 11(3.8%) and only 7(2.4%) of the respondent's family member /daughters aged 9-14 years were vaccinated.

This was corroborated by the thematic analysis of key informant interviews of women and male partners of willingness to uptake towards CCS. All but one of the

female respondents had ever screened for CC. All the male respondents had never encouraged their spouse or girlfriend to screen for CC.

Quotes

• Yes, I have gone for screening. Yes, I can't remember the type of CCS. (Female respondents)

• No, I have never encouraged my wife to screen for cervical cancer. (male partner)

• Okay. I have not encouraged my spouse to go for CCS. (male partner)

The multiple logistic regression of factors that determines the utilization of CCS are shown in Table 5. The age 40 years and above (CI= 1.114-276.939, p=0.042), family history of CC (CI=2.052-1837.29, p=0.018), knowledge of HPV vaccination (have you heard of HPV vaccination?) [CI=2.587-552.962, p=0.008] that were statistically significant.

Discussion

This study demonstrated poor knowledge of cervical cancer (CC) and its prevention among the respondents. This finding was corroborated with several studies who similarly observed poor knowledge among their respondents [23–27]. However, some studies found good know of CC and cervical cancer screening (CCS) among their respondents [22, 28–30]. This difference may probably be due to the differences in the study population and geographical location. From the finding in this index study, there is a need for CC cancer awareness campaign from the grassroot the rural communities to the urban centres to educate the communities on CC and its preventive measures that will lead to increase screening uptake this will ultimately mitigate the burden of CC in LMICs.

A large proportion of the respondents are willing to undergo CCS as well as recommend CCS and HPV vaccination to their friends and family, although major of the women will need the approval of their husband to undergo CCS. This is so because of the leadership roles male spouses plays at home and in our community. Other researchers support these findings [22, 23, 26]. Therefore, since women of aged 25-65 years are willing to undertake CCS and also knowing the importance of the leadership roles male partners play at home and the community, all important stakeholders especially the government, non-governmental organizations (NGOs), religious and community leaders as well as male partners must work together to develop strategies that will exploit these findings in ensuring eligible women have easy access to CCS at affordable cost and available at all times to increase uptake of CCS and therefore reduce the burden of the disease in LMICs.

A large proportion of the respondent demonstrate positive intention towards CCS as they perceived CCS as important and beneficial. The factors identified to determine uptake of CCS were the age 40 years and above, family history of CC and knowledge of HPV vaccination. Iwara et al in a similar study identified age as the only factor that was significantly associated with screening service utilization ($p<0.05$) in the multivariate model [25]. This finding is in keeping with this index study. Rimende-Joel & Ekenedo in their study whose findings support that of this present study. They identified location of residence, and religion to significantly determined the knowledge and screening/prevention practices ($P<0.05$), while marital status and age ($P<0.05$) significantly affected the respondents' beliefs about cervical cancer and prevention practices [30]. In another similar study by Ofuebe et al whose finding corroborate that of this current study. They found that age was significantly associated with the usage of CCS (P-value <0.05)[29]. Abdulelah et al found the presence of a positive family history for cervical cancer was identified as a statistically significant promoter for screening uptake (p-value = 0.004), which is in keeping with this index study [31]. Egede et al in a similar study identified being 40 years of age or less, married, educated, of high socio-economic class and having first sexual intercourse at 18 years or less were associated with willingness to pay for screening [22]. Also Jemal et al found having a diploma level of education (AOR =0.48;95%CI:0.24 ,0.98), having three or more children (AOR =3.65;95%CI:1 .44,9.21), having multiple sexual partners(AOR =3.89;95%CI: 1.38,11.01), and knowledge of cervical cancer screening (AOR =2.66;95% CI:1.19,5.95) were statistically significantly associated with cervical cancer screening utilization in their study [32]. Al-amro et al found healthcare provider encouragement, years of marriage (odds ratio (OR) =5:24, confidence interval (CI) =95%, p =0:00), and use of the private healthcare sector (OR = 2:20, CI = 95%, p =0:012) to be the predictors of CCS [33]. Whereas Ampofo et al found that unemployed women were less likely to have an interest in CC screening than those who were employed (adjusted odds ratio (aOR) =0.005, 95%CI:0.001–0.041, p=0.005),women who were highly educated were 122 times very likely to be interested in CC screening than those with no or low formal education (aOR =121.915 95%CI: 14.096–1054.469, p<0.001) and those who were unmarried were less likely to be interested in CC screening than those with those who were married (aOR =0.124, 95%CI: 0.024–0.647, p=0.013) [16]. Therefore, there is a need for continuous awareness creation and education on cervical cancer and its prevention among women and their partners to increase the uptake of cervical cancer screening and reduce the burden of the disease.

The strength of this study is that it uses a mixed method approach in its methodology involving multiple PHCs which enable generalization of findings to similar studies. The limitation of this study was firstly, a non-probability sampling technique was used in the study which increase the chances of introducing bias. And Secondly, it was difficult to interview respondents in local dialects, only women who understands English language were recruited and interviewed.

In conclusion, there is a generally poor knowledge of CC and CC prevention among all the respondents. There is an urgent need of the various stakeholders in CC prevention to develop policies that will increase awareness and knowledge of CC and its prevention among women and their male partners as well as make CCS a routine

mandatory test for all women eligible women (age 25-65 years) at all PHCs across the country. This will enable CCS access, affordable and available at the community, therefore reducing the burden of the disease in LMICs.

Author Contribution Statement

OI conceptualize, designed the study, collected the data, data analysis and interpretation of results, draft and revised the manuscript. OSA designed the study, data analysis and interpretation of results, draft and revised the manuscript. PE0, AEO, CJA, CUU, OBO, LTS, HOE, OEU designed the study, interpretation of data, and revision. All authors read and approved the final version of the manuscript

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Funding Statement

The study was self-funded. It is part of an approved student thesis.

Ethical Declaration

The study adhered to both local and international Good Clinical Practice (GCP) requirements. Ethical approval was sought from Benue State Ministry of Health Research Ethics Committee (MOH/STA/204/1/275). All jointly analysed data was without personal identifiers, fully anonymized. Data sharing agreements was done. For protection of subjects the ethical principles of autonomy, privacy, non-maleficence and confidentiality was adhered to and informed consent obtained.

Availability of Data

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The authors declare that they have no competing interests

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