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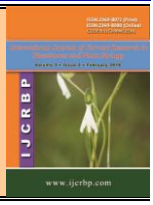

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Prevalence and Pattern of Herbal Medicine Use in Pregnancy among Women Attending Clinics in a Tertiary Hospital in Imo State, South East Nigeria

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Abstract

Herbal Medicine use even in pregnancy around the world has been on the increase despite widely reported dearth in information on safety of Herbs during pregnancy. This is to determine the prevalence and pattern of use of herbal medicines among pregnant women and nursing mothers who attended clinics in a tertiary hospital in South-East, Nigeria. This is a cross-sectional descriptive study of 500 pregnant and nursing mothers who were attending clinics in a tertiary hospital in Imo State, South East, Nigeria. A semi structured, pretested, interviewer administered questionnaire was used to collect information from participants and the systematic random sampling technique was used to select the study participants. Despite a generally high awareness (98.89%) about herbs noticed in this study, the prevalence of use during pregnancy was high (36.8%) with higher proportion of utilization recorded in the second (44.0%) and first (28.3%) trimesters of pregnancy. Majority of them (90.2%) used at least two or more types of herb during pregnancy and the common herbs used were; Bitter leaf (*Vernonia amygdalina*), palm kernel oil, bitter kola, dogonyaro (*Azadirachta indica*) and garlic. The main reasons for use were; to alleviate pregnancy symptoms, (59.2%), and to treat malaria, (52.2%). Utilization was affected by attitude (p=0.004) and level of knowledge (p=0.000) of participants towards herbal medicine. The prevalence of herbal medicine use was high among our study participants so there is need to institute appropriate control measures by the relevant authorities to deal with this problem.

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Introduction

The world has long been alerted of the risks associated with herbal medicines but they continue to play significant roles in the management of minor and major ailments in developed and developing countries where their use is reported to be on the increase (Tamuno et al., 2010; Corns, 2003). The innate urge among human beings to try new and alternative ways of relieving suffering is exemplified by the popularity of complementary and alternative remedies during sickness (Austin, 1998; Wooton and Sparber, 2001). The need to use herbal medicine is also fueled by the quest for therapies considered more congruent to one's values,

beliefs and philosophical orientation towards health and life (Austin, 1998; Ezeome and Anarado, 2007). It is documented that about 65 to 80% of the world population use herbal medicines as their primary form of health care (Eisenberg and Davis, 1998; WHO, 2015). Patients who are likely to be at risk from adverse effects of herbal medicines include those who are already prone to difficulties from regularly prescribed medications namely; the fetuses, infants and older children, elderly as well as pregnant and lactating women (Drew, 1997; Gold and Cates, 1980; Roulet et al., 1988; Saxe, 1987). In developing nations most especially, regulation of sales, importation and manufacturing of herbal medicines are not subject to rigorous scrutiny in terms of safety and efficacy as is the case in conventional orthodox medicines (Barnes, 2003).

Prevalence of herbal medicine use in pregnancy varies greatly from place to place, even within similar localities, although little is known about their outcome in pregnancy. It was reported to be 57% in a study in the United Kingdom (Hoist et al., 2009), 36% among pregnant women in Norway (Nordeng and Havnen, 2004), 12% and 36% in two different studies in Australia (Pinn and Pallet, 2002; Foster et al., 2006), 40% in Palestine (Deema, 2012), and 42% in Tanzania (Mbura et al., 1985). In a country wide survey in Nigeria (Fakeyee et al., 2009), the average prevalence of herbal medicineuse among pregnant women was 67.5%, with the South West having the highest prevalence of 37.3%, followed by North Central, 35.8% while least use was among women from North West, 26.9%. Also prevalence of 31.4% has been reported on use in current pregnancy in a study from Northern Nigeria and 12.1% by Gharoro and Igbafe in Benin City, Nigeria (Gharoro and Igbafe, 2000).

Herbal medicine use among pregnant women raises particular concerns that have been attributed to the herbal ingredients (Tados and Ephedra, 2004), interactions between a herbal product and other pharmaceuticals (Dugoua et al., 2006; Veckers and Zollman, 1999) and contamination of products by unlabeled toxins (Ko, 1988). Exposure of pregnant women to chemicals such as herbs and supplements during pregnancy period could affect their fetuses (Bercaw et al., 2010) which could contribute to maternal and fetal morbidity and mortality.

Despite these known concerns, many patients do not disclose use of herbal medicines to their health care providers, although some herbal medicine use by pregnant women have been reported to have been recommended by health care providers (Broussard et al., 2009), natural or alternative health care providers (Hepner et al., 2002), pharmacists (Hollyer et al., 2002), friends and family (Hollyer et al., 2002; Nordeng and Havnen, 2004) and in response to information from media houses (Tsui et al., 2001). In addition to these concerns, poor regulatory frame work for importation, manufacture, and distribution of herbal medicines are prevalent even in African and where registered, adherence to GMP principles of safety and efficacy are lacking (Tsui et al., 2001; Wambebe, 2009). Thus, this study aims to assess the attitude, knowledge, prevalence and pattern of herbal medicine use among pregnant women and nursing mothers attending antenatal and postnatal care services in an urban Tertiary Care Centre in Owerri, Imo State, Nigeria.

Materials and methods

Study area and study population

The study was conducted at the Federal Medical Centre, Owerri. Owerri is the capital of Imo State, and it is an urban town consisting of three Local Government Areas (LGAs) namely; Owerri Municipal, Owerri North and Owerri West (Government of Imo State, 2006). It is located at Latitude 5^0 29'O" N and Longitude 7^0 2' O" E and has an estimated population of about 400,000 people (Federal Republic of Nigeria, 2009). Federal Medical Centre was established in 1994 and has about 700 bed spaces. It renders specialist care in pediatrics, obstetrics and Gynecology, Internal Medicine and Surgery. It serves as a referral center for other primary Secondary health care facilities and also as a training facility for undergraduate and postgraduate programs in Medicine and allied courses. The study population comprised pregnant women attending Antenatal care services (ANC) in the hospital and those that were attending postnatal care who had their ANC in the hospital.

Study design

This was a hospital based cross sectional descriptive study.

Selection criteria

Only pregnant women attending ANC and those that delivered within 42 days prior to study who attended ANC in the hospital were enrolled for the study. Those who did not meet the above criteria were excluded.

Simple size determination and sampling technique

Using the Kish formula ($n=Z^2pq/d^2$) (Araoye, 2003; Kish, 1965) for determining adequate sample size and further correcting for population less than 10,000 using $n_1=N/(1+(N/n_1)$, a total of 500 participants were interviewed for the study. Where, Z = standard normal deviate set at 1.96, p= Prevalence of herbal use among pregnant women in a previous study (Fakeyee et al., 2009), d=level of precision set at 0.05, q=1-p, N=total number of ANC and ANC attendees within the study period (2500), n=corrected sample size. The sampling method used in this study was the systematic random sampling technique. Using the sampling fraction of 1/5, (n/N=500/2500), one out of every 5 women who attended the clinic in each day was selected and interviewed until the required sample size for the study was obtained. With an average of 100 attendees per clinic day, 20 women were studied each clinic day and the first participant was selected by simple random sampling by balloting, then subsequently every 5^{th} attendee was selected until the required number for each day was gotten. Those selected that refused to participate were replaced by the next willing person on the row, using the daily clinic register.

Data collection and analysis

Data was collected using a pretested, interviewer administered, semi-structured questionnaire. The questionnaire comprised four sections; section A, contains questions on socio-demographic characteristics of participants, section B, contains questions on awareness and knowledge of participants on herbal medicine, section C contains questions on attitude of participants towards herbal medicine use while section D, contains questions on utilization of herbal medicine. The questionnaire was coded before entering the data into the computer and all data was organized and analyzed by the researchers using computer software, (EPI INFO, 7.1.3). Descriptive statistics were presented as frequency, percentages, mean and standard deviations where necessary. For relationship of variables, chis-square test and logistic regression were used.

Knowledge of participants was scored using five questions with each question having 0-5 scores. The total possible scores range from 0 and 25 and participants' knowledge was classified into three levels. The cut-off for "good knowledge"; ≥70% of the 25 question scores, "moderate knowledge" from 56-69% of the 25 question scores, and "poor knowledge" less than 56% of the 25 question scores. Concerning attitude, the answers were categorized into five Likert scale levels: strongly agree, agree, not sure, disagree, and strongly disagree. Each correct answer had a maximum score of 5 and a minimum score of 1 for an incorrect answer. There was a total of 12 questions, six negative and six positive items with a total attitude score of 60. The participants' attitude was classified into three levels. The cut off point for "good attitude" was 80% and above of 60 scores, "Fair attitude" was 60-79% of 60 scores, while "poor attitude" was less than 60% of 60 scores.

Ethical approval

Ethical approval was gotten from the Ethical Committee of the Department of Community Medicine, Madonna University, Elele, Rivers State, Nigeria and the hospital management of Federal Medical Centre Owerri before proceeding with the study. Informed verbal consent was obtained from each participant before questionnaire interviews were administered and participation in this study was voluntary as participants were free to opt out at any level of the study.

Results

The mean age of the participants were 28.9±4.9 years with more than half of them (54.8%) being within the 21-30 years age bracket. Majority of the participants were Ibos (83.0%), ever married, (89.2%) and had tertiary education, (55.2%). Their commonest occupation was trading, (29.8%) while the least was farming, (4.0%). Most of the participants, (82.8%), were attending ANC, and majority of them were in their second (52.3%) and third (30.4%) trimesters of pregnancy and were multigravidas, (73.4%) (Table 1).

Almost all the participants (98.8%) were aware of herbal medicine practice and the common practitioners mentioned were; herbalists, (77.7%), traditional birth attendants, (72.9%), and traditional bone setters, (63.8%). The common herbs known were: ginger (75.5%), garlic (73.3%), bitter leaf (*Veronia amygdalina*) (72.5%) and palm kernel oil (68.2%), with more than half of the participants (56.0%), agreeing that herbs were not safe in pregnancy. The common sources of information on herbs were from; Radio, (68.4%), friends, neighbors and relatives, (56.5%) and television, (54.5%). About 47.2% of the participants had good knowledge about herbal medicine with lower proportion of them, (29.8%) having good attitude towards herbal medicine use (Table 2).

Table 1. Socio-demographic/economic characteristic of participants.

Variable	Frequency (n=500)	Percentage
Age group (yrs)		
≥20	34	6.8
21-30	274	54.8
31-40	173	34.6
>40	19	3.8
Total	500	100
	Mean Age = 28.9+ 4.9 yrs	
Tribe		
Igbo	415	83.0
Ikwere	39	7.8
Yoruba	16	3.2
Hausa	16	3.2
Others	14	2.8
Total	500	100
Marital Status		
Never married	54	10.8
Ever married	446	89.2
Total	500	100.0
Educational Status		
None	21	4.2
Primary	59	11.8
Secondary	144	28.8
Tertiary	276	55.2
Total	500	100
Occupation		
Trader	148	29.6
Civil Servant	110	22.0
House wife	77	15.4
Professional	46	9.2
Student	39	7.8
Artisan	39	7.8
Unemployed	21	4.2
Farmer	20	4.0
Total	500	100
Monthly Income (Naira)		
≤50,000	452	90.4
>50,000	48	9.6
Total	500	100
Clinic Attended		
ANC	414	82.8
PNC	86	17.2
Total	500	100.0
GA of Pregnant Mothers (414)		
First Trimester (1-2 wks)	68	16.4
Second Trimester (13-26 wks)	220	53.2
Third Trimester (>26 wks)	126	30.4
Total	414	100.0
Parity		
Primigravid (0)	79	15.8
Multigravida (1-4)	367	73.4
Grand multigravida (>4)	54	10.8
Total	500	100.0
	Mean parity 2.5±0.9	

Table 2. Awareness, knowledge and attitude of participants towards herbal medicine.

Variable	Frequency (n=500)	Percentage
Aware of Herbal Medicine Practice (n=500)		
Yes	494	98.8
No	6	1.2
Total	500	100
Herbal practitioners Known ** (n=494)		
Herbalist	384	77.7
Traditional birth attendants	360	72.9
Bone setters	315	63.8
Native doctors	246	49.8
Spiritualists	187	37.2
Religious healers	223	44.6
Traditional surgeons	102	20.7
Diviners	57	11.5
Others	25	5.1
Forms of Herbs Known (n=494)**		
Ginger	373	75.5
Garlic	362	73.3
Bitter leaf (Veroniaamygdalina)	358	72.5
Palm Kernel oil	337	68.3
Bitter kola	317	64.2
Dogoyaro	317	64.2
Honey	284	56.8
Aloe vera	269	54.5
Utazi/nzu (baked clay mixture)	265	53.6
Agbo (Herbal mixture)	227	45.9
Moringa	205	41.5
Palm wine	149	30.2
Pepper/spices	122	24.7
Codliver oil	117	23.7
Iroko seeds	100	20.2
Avocado pear seed	69	13.9
Others	56	11.3
Is Herbal use Safe in Pregnancy (n=494)		
Yes	150	30.0
No	280	56.0
Unsure	70	14.0
Total	500	100
Sources of Information (n=494)**		
Radio	338	68.4
Friends/Neighbors/Relatives	279	56.5
Television	269	54.5
Newspaper	264	53.4
Market place	231	46.8
Village meetings	155	31.4
Schools	143	28.9
Church	139	28.1
Books	96	19.4
Health personnel	71	14.4
Seminars	68	13.8
Others	23	4.7
Knowledge Score (n=500)		
Poor (0-55%)	109	21.8
Fair (56-69%)	155	31.0
Good (≥70%)	236	47.2
Total	500	100
Attitude Score		
Poor (0-59%)	146	29.2
Fair (60-79%)	205	41.0
Good (≥80%)	149	29.8
Total	500	100

**= multiple response

Table 3. Use of herbs in pregnancy among participants.

Variable	Frequency (n=500)	Percentage
Use during Pregnancy (n=500)		
Yes	184	36.8
No	316	63.2
Total	500	100
Trimester Used (n=184)		
First Trimester	52	28.3
Second Trimester	81	44.0
Third Trimester	40	21.7
Throughout Pregnancy	17	9.2
During Labor	29	15.8
Total	184	100
Number Used (n=184)		
One	18	9.8
Atleast 2 or more	166	90.2
Total	184	100.0
Routes of Administration (184)**		
Orally	184	100.0
Topically	119	64,7
Eye	30	16.3
Nose	11	6.0
Injection	4	2.2
Forms of herbal preparations used (n=184)**		
Liquid	178	96.7
Crude (raw)	175	95.1
Packaged	69	37.5
Powdered	64	34.8
Syrup	51	27.7
Tablet	11	6.0
Herbs Used (n=184)**		
Bitter leaf (Veronia amygdalina)	100	54.3
Palm kernel Oil	85	46.3
Bitter Kola	73	39.7
Dogoyaro (Azadirachiaindica)	66	35.9
Garlic	63	34.2
Utazi	62	33.7
Ginger	57	33.0
Holy basil plant (Ocimumviride)	52	28.3
Honey	51	27.7
Agbo (Herbal mixture)	42	22.8
Nzu (Baked clay mixture)	40	21.7
Aloevera	39	21.2
Moringa olifera	28	15.2
Others	39	20.1
Reasons for use n(184)**		
To alleviate Pregnancy Symptoms	109	59.2
Treat malaria	96	52.2
Cheap	92	50.0
Recommended by friends and family	53	28.8
Effectiveness	52	28.3
Culture/Belief of my people	40	21.7
For having male babies	37	20.1
Better Safety	24	13.0
To improve babies condition	24	13.0

** = multiple response, others = pumpkin leaves, shear butter pepper/spice, cashew tree bark/leave, Alabukun mixture, Palm wine, Iroko seed, Lime water, Onions, Cod liver oil.

A sizeable proportion of participants, (36.8%), used herbs during pregnancy and the commonest trimester the herbs were used was in the second trimester of pregnancy, (44.0%). Majority of the participants (90.2%) used at least 2 or more herbs during pregnancy and the common routes of administration were oral, (100%) and topical (64.7%) routes. Common herbs used during pregnancy were: bitter leaf (*Vernonia amygdalina*) (54.3%), palm kernel oil (46.3%), bitter kola (39.7%), dogoyaro (*Azadirachta indica*) (35.9%) and garlic (34.2%) and majority of them were taken in their liquid (96.7%), and crude (raw), (95.1%) forms. The main reasons for their use during pregnancy were to alleviate pregnancy symptoms (59.2%), to treat malaria (52.2%) and because it is cheap (50.0%) (Table 3). Level of knowledge about herbal medicine was found to significantly affect herbal use during pregnancy, (χ^2=8.203, df=2, p=0.004), with participants who had poor knowledge, (OR=1.638; 1.019-2.633, *p*=0.041) and fair knowledge, (OR=2.046; 1.341-3.121, *p*=0.001) being more likely to use herbs than their counterparts with good knowledge about herbs. Also use of herbs during pregnancy was significantly affected by the attitude of the participants, (χ^2=33.916, df=2, *p*=0.000), with participants who had poor attitude towards herbal use having the highest likelihood of use than others, (OR=7.603; 4.436-13.031, *p*=0.000) (Tables 4 and 5).

Table 4. Association between attitude, knowledge and use of herbs during pregnancy.

Variable	Use of herbs during pregnancy		Total (%)	Statistic/*p*-value
	Yes (%)	No (%)		
Level of Knowledge				
Poor (0.55%)	44(40.4)	65(59.6)	109(100)	χ^2=8.203
Fair (56-69%)	71(45.8)	84(54.2)	155(100)	df=2
Good (≥70%)	69(29.2)	167(70.8)	236(100)	p=0.004*
Level of Attitude				
Poor (0.59%)	90(61.7)	56(39.3)	146(100)	χ^2=33.916
Fair (60-80%)	68(33.2)	137(66.8)	205(100)	df=2
Good (≥80%)	26(17.4)	123(82.6)	149(100)	p=0.000*
Total	184(36.8)	316(63.2)	500(100)	

*=significant

Table 5. Logistic regression of knowledge, attitude and use of herbs in pregnancy.

Variable	Odds Ratio	95% C1	*p*-value
Level of Knowledge			
Poor (0.55%)	1.638	1.019-2.633	0.041*
Fair (56-69%)	2.046	1.341-3.121	0.001*
Good (≥70%)	1.000	-	
Level of Attitude			
Poor (0.59%)	7.603	4.436-13.031	0.000*
Fair (60-80%)	2.348	1.405-3.923	0.001*
Good (≥80%)	1.000	-	

*=significant

Discussion

The awareness of participants about herbal medicine was high, (98.8%) with majority of them having good, (47.2%) and moderate, (31.0%) knowledge. This high level of awareness has been reported in previous studies on herbal medicine use (Elolemy and Albedah, 2001; Banwat et al., 2015). This finding of high awareness and knowledge could be attributed to our African culture where traditional medicine is deeply entrenched and commonly practiced. The common herbs known were ginger, garlic, bitter leaf and palm kernel oil. Types of herbs known vary from place to place depending on the types that are common in each location. Less than half of the respondents agreed that herbs were safe in pregnancy. This response on safety of herbal drugs during pregnancy was lower than the 81% reported among pregnant women in another study in Nigeria (Fakeyee et al., 2009). This difference could be as a result of demographic and regional differences in the two studies.

About 180 (36.8%) of the participants used one form of herbal medicine or the other during pregnancy. This

prevalence is higher than 12.08% reported in Benin City Nigeria (Gharoro and Igbafe, 2000), 31.4% reported by Tamuno et al. (2010) among pregnant women in Northern Nigeria, and 28.9% from results of a multinational study by Banwat et al. (2015) while it was lower than 67.5% reported by Fakeyee et al. (2009) from a country wide survey in Nigeria, 40% by Deema (2012) in Palestine, 57% in a study from the United Kingdom (Hoist et al., 2009), and 42% in Tanzania (Mbura et al., 1985). However the result from our study was consistent with the prevalence of 36% reported among pregnant women in Norway (Nordeng and Havnen, 2004) and two different studies carried out in Australia (Pinn and Pallet, 2002; Foster et al., 2006). These variations could be explained by the fact that most of these studies examined herbal use in previous pregnancies while others examined use only in the index pregnancy like ours. Despite these wide spread use, few studies are available on the safety of herbs for pregnant women (Tamuno et al., 2010; Ernst, 2006; Born and Barron, 2005). This might be worse in developing countries especially in Africa where literature on the efficiency and use of these herbs are lacking. This high prevalence is likely to be connected to the fact that most people in our environment see herbal medicine as part of our culture and have been in contact with its practitioners over time, giving a false impression that our ancestors used them and claimed that they were safer and more effective than orthodox drugs.

Herbal use was common in the second trimester (44%) and 1st trimester (28.3%) of pregnancy among the users. This finding agree with the reports from Kano, Nigeria by Tamuno et al. (2010) and the United States of America by Loik et al. (2010) which revealed higher prevalence and association of use in the first and second trimester. This may be explained by the fact that they could take herbal medicine to alleviate pregnancy symptoms which are more in the first and second trimester and to validate this fact, most of the of the participants claim they used them to alleviate pregnancy symptoms and for the treatment of malaria. These reasons where similar to those reported by Orief et al. (2014) from Alexandria, Egypt which reported nausea, vomiting and abdominal Colic as common reasons for use but differed from the major reason reported by Deema (2012) from Palestine which was that the women regarded herbs to be safer than orthodox medications.

About 90.2% of herbs users utilized at least two or more during pregnancy. Similar figure of 90% use was reported by a study from Palestine (Deema, 2012). This use of more than 2 herbs in pregnancy portends greater danger in that drug interactions were likely to occur and side effects could be more. This is because research on safety of these herbs are lacking in most cases in our region. We found that all the drugs were taken orally sometimes in combination with other routes, with most of them taken in their liquid prepared form (96.7%) and crude/raw forms (95.1%), this agrees with the findings by Fakeyee et al. (2010) in Ibadan where majority of herbs used were in their crude forms. In our region most of the traditional practitioners who prescribe these drugs lack the capacity to package it properly thus they present them for sale in their natural forms and then educates the users on how to prepare it and the dosages to take depending on what was used to prepare the herb and the types of herb. The common herbs used by the users were: bitter leaf (*Vernonia amygdalina*), palm kernel oil, bitter kola, dogoyaro (*Azadirachta indica*), garlic and ginger. A lot of variations exist in the pattern of herbal use as seen from reviewed studies but this could depend on the location of the studies. Different herbs grow in different areas and locations of the world even in the same country and this affects the pattern of use. But generally ginger and garlic tends to have a wider geographic spread with use being reported in studies from countries around the world (Tamuno et al., 2010; Hoist et al., 2009; Nordeng and Havnen, 2004; Louik, 2010; Kennedy et al., 2013).

Our study found that use of herbs was affects by level of knowledge of the participants about herbs and their side effects with those that had good knowledge about herbs being the least to use while those with poor knowledge were the highest users. This effect of knowledge and use was observed by Banwat et al. (2015) from Jos, Nigeria, though the pattern differed slightly. Generally knowledge about the side effects and safety of herbs during pregnancy is likely to reduce the use due to fear of harmful effects to the fetus and mother during pregnancy. Also our study revealed that use was higher among those with bad attitude towards herbal use in pregnancy than their other counterparts. This finding was corroborated by the study by Fakeyee et al. (2009) in Ibadan where majority of users had a poor attitude towards herbal use. Attitudes are learnt over time and are influenced mainly by culture and beliefs of the people and are very difficult to change. Most of the Africa cultural beliefs strongly in herbal medicine use and its efficacy over centuries and are transmitted from parents to their siblings, from generations to generations thus affecting our attitudes and behaviors towards herbal

medicine use. This is a grave problem in that behavior and attitudes are very difficult to change once learnt and so needs a sustained and practical health education to overcome.

Conclusion

Present study revealed a high use of herbs during pregnancy and in the majority of cases; more than two herbs were used in index pregnancy. Most of them were taken in crude forms, so the dosages may not be rightly applied. This is a great public health problem owing to the side effects and complications in pregnancy that could be associated with their use. Also only few researchers in our region have done works on the safety of these herbs during pregnancy. Thus there is need to create awareness on the harmful effects of these herbs during pregnancy by the relevant authorities through the right channel and to implement existing policies and regulations on the production, sale, distribution and use of these products in our sub region. Also in-depth research on the safety and side effects associated with the intake of these drugs should be carried out and financed by the government through the relevant regulatory bodies.

Conflict of interest statement

Authors declare that they have no conflict of interest.

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