

Original Article

Covid-19 Risk Perception and Risk Reduction Practices among the Population of Kaduna State

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Article Metrics

Date submitted: 14/10/2020

Date Accepted: 11/12/2020

Date Published: Jan. 2021



www.jmbsr.com.ng

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ABSTRACT

Background: Corona Virus Disease (COVID) 19 is a pandemic that has posed many problems to the World. Various measures have been recommended by World Health Organization and American Centre for Disease Control in a bid to prevent and control the spread of the virus. Hence the need to evaluate the risk perception and risk reduction practices of COVID 19 among the residents of Kaduna.

Materials and methods: This was a cross sectional descriptive study conducted in Kaduna State among the general population. Using a multistage sampling method, Four hundred and twenty-seven participants were selected using a structured interviewer administered questionnaire. Data was collected using Open Data Kit Software and analysed using SPSS software version 25

Results: The mean age of the participants was 40±13.9 years old, 61% were males, 81% married, 55% self employed, 62% practice Islamic religion, 36% had at least secondary education and 59% speaks Hausa and/or Fulani. Majority (99.5) were aware of Covid-19. Seventy four percent of them had good perception of Covid-19 risk, however only 37% of them practiced good Covid-19 risk reduction measures. Most of those who had good knowledge of how Covid-19 is transmitted and how they can prevent themselves from getting the infection were 3 and 6 times more likely to have good perception of Covid-19 risk respectively compared to those with poor knowledge.

Those who knew how Covid-19 is transmitted and those with good perception of Covid-19 were 4 and 5.6 times more likely to practice Covid-19 preventive measures compared to those who did not know and those with poor perception respectively.

Conclusion: Majority of Kaduna State citizens were aware of COVID-19 infection and their risk perception was good. However, their risk reduction practices were poor. Generally, there was a low level of stigmatization among Kaduna residents, and risk reduction practices were influenced by perception, age, occupation and ethnicity.

Keywords: Covid-19, Risk perception, Risk reduction practice, Stigmatization



Access to the article

website: <http://www.jmbsr.com.ng>

doi: <https://doi.org/10.46912/jmbsr.xx>

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How to cite this article:

CB Shurkuk, JI Akunne, S Joseph, T Olasinde, SN Kase, T Dahiru, et al., Covid-19 Risk Perception and Risk Reduction Practices among the Population of Kaduna State. *J Med Bas Sci Res* 2020;1(1):49-57.

INTRODUCTION

Viral diseases continue to emerge and represent serious public health challenges.¹ Coronaviruses are a large family of viruses found in many different species of animals, including camels, cattle, and bats. The new strain of coronavirus identified as the cause of the outbreak of respiratory illness in people first detected in Wuhan, China, has been named COVID 19 (Formerly, it was referred to as 2019-nCoV).² The virus was first noticed to cause disease to man in December, 2019 and person-to-person spread continued outside Hubei and in countries outside China like; majority of Asian, Europe, Africa and United States of America. Almost all countries now have ongoing community spread of the virus.^{3,4}

Globally, as at 15 August 2020, 21.2 million confirmed cases of COVID 19 and 761,000 deaths. In the European region 3,754,649 cases were confirmed while in Region of Americas 11,420,860 were confirmed. South East Asia had 3,040,168 confirmed cases and Africa had 945,165 confirmed cases.⁵ Nigeria had 49,068 confirmed cases.⁶

Risk perception of COVID 19 is in five main domains: catastrophic potential, probability of dying, reasons for exposure, the belief of being in control of the situation, and trust towards authorities. Knowing which risk perceptions influence a complex phenomenon, affected by multiple psychological, societal and cultural factors that are changing in place and time, is central for pandemic preparedness and planning. These risk perceptions guide individuals' judgments and evaluations of threats and can limit public compliance with and response to information communicated by authorities.⁷ While risk reduction practices is pivotal in controlling the spread of the disease.⁷⁻¹⁰

Social stigma in the context of health is the negative association between a person or group of people who share certain characteristics and a specific disease. In an outbreak, this may mean people are labelled, stereotyped, discriminated against, treated separately, and/or experience loss of status because of a perceived link with a disease. Such treatment can negatively affect those with the disease, as well as their caregivers, family, friends and communities. People who don't have the disease but share other characteristics with this group may also suffer from stigma. The current COVID-19 outbreak has provoked social stigma and discriminatory behaviours against people of certain ethnic

backgrounds as well as anyone perceived to have been in contact with the virus.¹¹

The World Health Organization (WHO) declared the 2019-2020 corona virus outbreak as a pandemic on 11 March 2020 considering the number of cases of COVID-19 outside China.¹² COVID-19 is a pandemic that has posed a lot of problems to the world. These problems are varied and range from medical, economic, social and diplomatic challenges among others. The extents of affectation vary from country to country. No country has however been able to completely solve all the problems especially knowing that knowledge on the disease entity is evolving.¹²

Various measures have been recommended by WHO and Centre for disease control in a bid to prevent and control the spread of the virus. The extent of applicability and adherence to the recommended measures vary across countries and even across cities in a particular country. The key measures recommended include: 1. Preventive measures like; avoid contact with people with acute respiratory tract infection, hand washing, avoid contact with farm or wild animals, social distancing, respiratory hygiene and avoid touching the face. 2. Control measures like; Isolation Centre, use of personal protective equipment among health care workers and Contact tracing.

Countries across the world have applied all or some of above measures. Countries that are adjudged to be very strict in the application of these measures tend to have lower intensity and rate of spread of the disease hence they tend to significantly alter the natural progression of the pandemic curve. This seems to be particularly so for those countries that instituted the measures early in the pandemic progression. Such countries like: China, Spain, Italy, North Korea and United Kingdom. Nigeria recorded its first confirmed case of COVID-19 on 27 February 2020 in Lagos through a business Italian traveller that arrived in Nigeria on 25 February, 2020; and became symptomatic on 26 February 2020.¹³ The Government of Kaduna State announced its first confirmed case on 28th March, 2020.¹⁴

Countries like Nigeria therefore has a lot of lessons to learn from the containment and mitigation efforts of above mentioned countries. This is particularly so observing that a number of people in Nigeria see COVID 19 as something that happens only abroad. Some even do not accept its existence while some think it

is a scam. However, the distributions of COVID 19 cases in Nigeria as at 16 August 2020 were 49,068 (total confirmed), 36,497 (discharged) and 975 deaths. Kaduna had a total of 1,815 confirmed cases, 1,595 discharged cases and 12 deaths.⁶ The attitude of an average Nigerian can therefore affect his adherence to the preventive or control measures which have worked in other countries. There was therefore need to study risk perception and risk reduction practices of COVID 19 among Nigerians especially Kaduna state residents due to increasing burden of the disease as the state is ranked among the top ten in Nigeria.⁶ This will give an insight on timely intervention measures to be instituted to mitigate effects of COVID 19.

The aim of this study was to assess the risk perception and risk reduction practices against COVID 19 among the residents of Kaduna state with a view to making recommendations.

MATERIALS AND METHODS

This study was conducted in approximately 420 households, 12wards (Kachia urban, Doka, Aboro, Gwantu, Chikun, Kakau, Kawo, Badarawa, Kufana, Gyallesu, Anchau and Kubau) in six local government areas (Kachia, Sanga, Chikun, Kaduna North, Zaria and Kubau) of the three senatorial zones (Southern Kaduna, Kaduna Central and Northern Kaduna) in Kaduna state. Kaduna state is in the North West zone of Nigeria.

Sample size calculation for this study since the study population was greater than 10,000.¹⁶

Sample size was determined using the Cochran's formula $(n) = Z^2 pq / d_2$.

Assuming 10% non-response rate (that was approximately 38), this brought number of participants to 422. However, using multistage sampling technique; two local government areas (LGAs) were selected per senatorial zone making a total of six LGAs. Two wards were selected per LGA making a total of 12wards. 35 households were selected in each of the 12wards making a total of approximately 420 households. The inclusion criteria include adults (18years and above) from each of selected 420households in three senatorial zones of Kaduna state. Those excluded include paediatric participants because assessing risk perception and risk reduction practices among this category of participants will be difficult, mentally deranged or very sick participants because information

obtained from this category of participants may not be very reliable and non consenting residents.

Data collection

Data for this study was collected using a pretested structured questionnaire (Appendix A) which was administered to the participants using Open Data Kits software by trained data collectors. The questionnaire contains sections on biodata, awareness of COVID 19, risk perception, risk reduction practices of COVID 19 and issues of stigmatization in COVID 19 disease. Data was collected from participants in 35households per ward across the three senatorial zones of Kaduna state, and was analyzed by Statistical Package for Social Sciences (SPSS) software version 25.

RESULT

Four hundred and twenty-seven participants completed the study giving it a response rate of 100%. The result is as shown in table 1.

The mean age of the participants was 39.9 years old, with standard deviation ± 13.9 . Most of them (30.4%) and (27.2%) were within the age group of 35 to 44 years and 25 to 34 years respectively. Also, most of them are males (60.9%), Married (80.8%), self-employed (55.0%), practiced Islamic religion (62.1%), had up to secondary education (35.6%) and speaks Hausa and or Fulani (59.0%).

Majority (99.5%) of the residents of Kaduna State have ever heard of Covid-19 infection, most of them (87.4%) and (85.2%) believe that the disease exists and have no cure respectively. Majority (79.4%) and (76.8%) admitted that they are susceptible to getting infected with Covid-19 from infected persons who exhibits or do not exhibit symptoms respectively. Some of them (31.4%) think that Covid-19 is a disease of the rich, while 13.6% think it is a disease of the poor. However, most of them (51.5%) and (60.4%) do not think that frequent travellers and health workers are at increased risk of getting infected with the disease respectively. (Table 2)

About 74% of residents of Kaduna State have good perception of Covid-19 infection(Fig 1)

A good proportion of participants practiced avoidance of contact

Table 1: Sociodemographic variables of respondent of Covid-19 risk perception and risk reduction practice in Kaduna State

Variable	Frequency (n = 427)	Percent
Age group (Years)		
15 – 24	45	10.5
25 – 34	116	27.2
35 – 44	130	30.4
45 – 54	70	16.4
55+	66	15.5
Sex		
Male	260	60.9
Female	167	39.1
Marital Status		
Single	69	16.2
Married	134	80.8
Others	13	3.0
Occupation		
Unemployed	69	16.2
Self employed	235	55.0
Public/Civil Servant	49	11.5
Student	30	7.0
Other Occupation	44	10.3
Religion		
Christianity	162	37.9
Islam	265	62.1
Level of Education		
No formal education	84	19.7
Primary	46	10.8
Secondary	152	35.6
Tertiary	145	34.0
Ethnicity		
Hausa/Fulani	252	59.0
Yoruba	15	3.5
Atyap	17	4.0
Jabba	37	8.7
Adara	21	4.9
Bajju	32	7.5
Gbagi	21	4.9
Others	32	7.5

with people with cough, catarrh and fever (62.5%), frequent hand washing (56.7%) and wearing of face mask all the time (50.6%) as risk reduction measures for Covid-19, however, only 18.5% of them practiced avoidance of touching of the face, 26.0% practiced staying at home and 21.1% cover their face with tissue paper or bent elbow when coughing or sneezing (Fig 2)

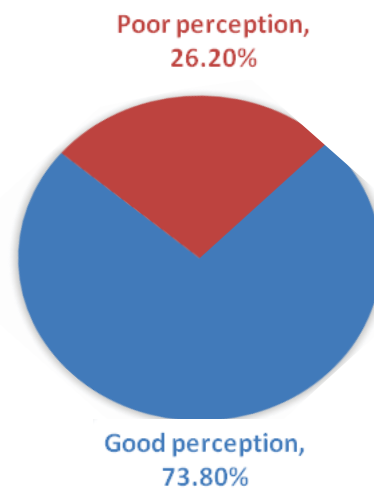


Figure 1: Level of risk perception of Covid 19 infection among residents of Kaduna State

Table 2: Risk perception of residents of Kaduna State about Covid 19 infection

Variable	Perception of Covid-19			
	Yes	No	NA	Total
Have you ever heard of Covid_19 disease?	freq (%)	freq (%)	freq (%)	freq (%)
Do you think there is a specific drug for treatment of Covid-19?	425 (99.5)	2 (0.5)	0 (0.0)	427 (100)
Do you believe that Covid-19 disease exist?	61 (14.3)	364 (85.2)	2 (0.5)	427 (100)
Do you think you can get infected with Covid-19 disease?	373 (87.4)	52 (12.2)	2 (0.5)	427 (100)
Do you think you can prevent yourself from getting infected with Covid-19?	339 (79.4)	34 (8.0)	54 (12.6)	427 (100)
Do you think a person with Covid-19 can have no symptom and yet transmit the disease?	364 (85.2)	9 (2.1)	54 (12.6)	427 (100)
Do you think the rich are the ones at risk of contracting Covid-19?	328 (76.8)	45 (12.5)	54 (12.6)	427 (100)
Do you think the poor are the ones at risk of contracting Covid-19?	134 (31.4)	239 (56.0)	54 (12.6)	427 (100)
Do you think frequent travelers are the ones at risk of contracting Covid-19?	58 (13.6)	315 (73.8)	54 (12.6)	427 (100)
Do you think the health workers are the ones at risk of contracting Covid-19?	153 (35.8)	220 (51.5)	54 (12.6)	427 (100)
Do you think the health workers are the ones at risk of contracting Covid-19?	115 (26.9)	258 (60.4)	54 (12.6)	427 (100)

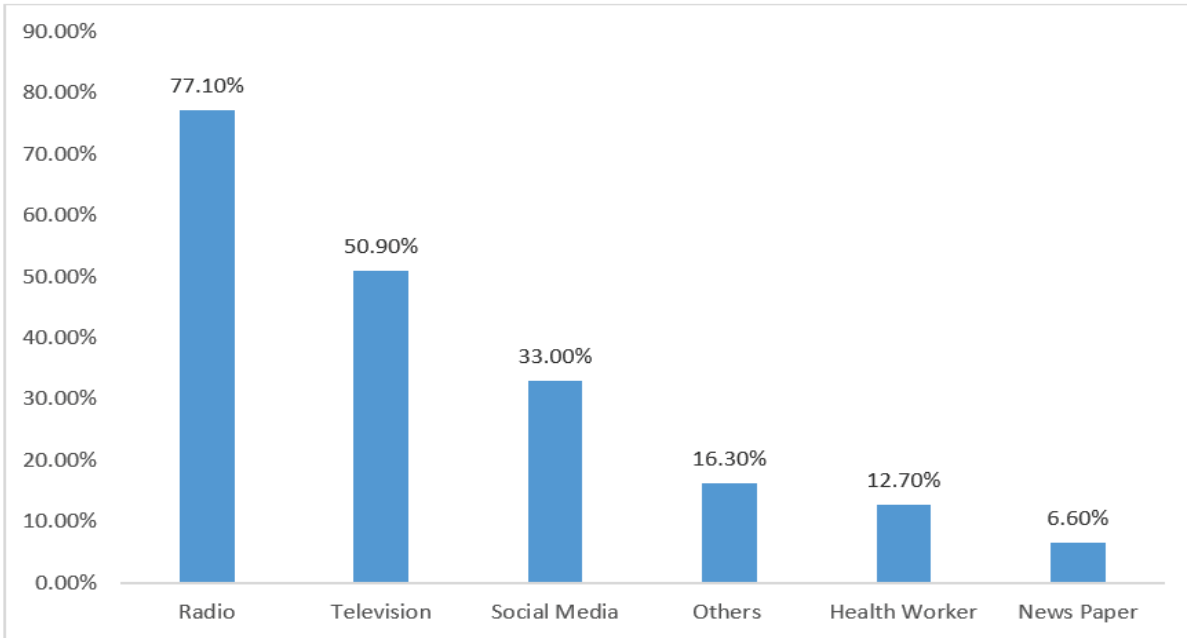


Figure 2: Respondents source of information about Covid-19 infection in Kaduna State

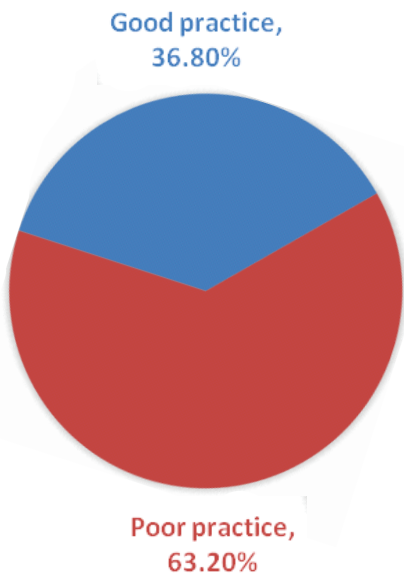


Figure 3: Level of risk reduction practice of Covid 19 infection among residents of Kaduna State

The risk reduction practice of participants was poor as only about 37% of participants had good risk reduction practices (Fig 3).

Majority of those who know how Covid-19 is transmitted (78.9%) had good perception of Covid-19. Most of those that know how to prevent themselves from Covid-19 (78.5%) also had good perception of Covid-19, these associations were statistically significant (p-value 0.000 each). Similarly, those who attained higher educational level (Tertiary education) had better perception (84.8%) of Covid-19 compared with lower educational level. This association was also statistically significant (p value 0.000)

Those with good perception of Covid-19 are 5.6 times more likely to practice Covid-19 risk reduction measures compared to those with poor perception, also those that know how Covid-19 is transmitted are 4 times more likely to practice Covid-19 risk reduction measure compared to those who do not know, these associations are statistically significant (p values 0.000 and 0.024 respectively) (Table 4)

Those who know how Covid-19 is transmitted and those that know how to prevent themselves from getting infected with Covid-19, their perception were 3.2 times and 6 times higher

Table 3: Risk reduction practice of Covid-19 infection among residents of Kaduna State

Variable	Perception of Covid-19	
	Yes freq (%)	No freq (%)
Which of the preventive measure of Covid-19 disease do you practice		
Avoid contact with people with cough, catarrh and fever	267 (62.5)	160 (37.5)
Frequent hand washing	242 (56.7)	185 (43.3)
Avoid contact with farm animals	59 (13.8)	368 (86.2)
Avoiding overcrowding and staying a distance of 2 meters away from other individuals	208 (48.7)	219 (51.3)
Covering the face with tissue paper or bent elbow when coughing or sneezing	90 (21.1)	337 (78.9)
Avoid frequent touching of the face	79 (18.5)	348 (81.5)
Staying at home all the time	111 (26.0)	316 (74.0)
Wear Face mask all the time?	216 (50.6)	211 (49.4)

Table 4: Multivariate analysis of factors influencing the level of practice of respondents about Corona virus

Variables	P value	AOR	95% CI for AOR	
			Lower	Upper
Level of perception				
No		1		
Yes	.000	5.58	2.876	10.833
Know how Covid-19 is transmitted				
No		1		
Yes	.024	4.13	1.206	14.115
Age group (Years)				
15 – 24	.112	1		
25 – 34	.030	.30	.101	.891
35 – 44	.042	.43	.186	.971
45 – 54	.160	.50	.272	1.239
55+	.797	.90	.403	2.011
Occupation				
Unemployed	.004	1		
Self employed	.003	4.49	1.671	12.065
Public/Civil Servant	.234	1.66	.722	3.795
Student	.007	4.01	1.449	11.102
Other Occupation	.101	2.77	.820	9.369
Ethnicity				
Hausa/Fulani	.001	1		
Yoruba	.174	.44	.179	1.364
Atyap	.196	2.78	.590	13.056
Jabba	.392	1.90	.437	8.279
Adara	.227	.46	.131	1.622
Bajju	.005	.15	.041	.575
Gbagi	.007	.11	.021	.538
Others	.198	.44	.126	1.536
Level of Education				
No formal education	.312	1		
Primary	.524	1.36	.531	3.471
Secondary	.087	1.97	.905	4.289
Tertiary	.083	2.08	.909	4.738

than those that don't know respectively, these associations were statistically significant (p values 0.003 and 0.000 respectively)

Majority of those who do not know how Covid-19 is transmitted (91.1%) had poor risk reduction practice for Covid-19, most of those that don't know how to prevent themselves from Covid-19 (82.4%) also had poor risk reduction practice for Covid-19. These associations were statistically significant (p values 0.000 and 0.015 respectively). Also, most of those with poor perception of Covid-19, 84.8% had poor risk reduction practice for Covid-19, this association was also statistically significant (p value 0.000). Most of those with no formal education (72.6%) had poorer risk reduction practice compared with higher levels. This association was statistically significant (p values 0.045).

Those within the age group 25 to 34 and 35 to 44 years old are significantly less likely to practice Covid-19 risk reduction measure (p values 0.03 and 0.042 respectively), while those that are self-employed and students are 4.5 and 4 times more likely to practice Covid-19 control measures respectively. These associations are also statistically significant (p-values 0.03 and 0.007 respectively)

DISCUSSION

This study showed that majority (99.5%) of Kaduna residents have heard about COVID-19. This finding is the same as reported by Reuben *et al* in North-Central Nigeria and similar to 98.5% found in Abuja, Nigeria as well as in Kenya, South Africa and the US, but lower in Saudi Arabia (58%).^{17,21} The reason for the increased awareness in our setting may be due to increasing information dissemination, as most residents mentioned radio (77.1%), television (50.9%), and social media as their source of information. This is similar to findings in a cross-sectional study by Reuben *et al* in North-Central, Nigeria and among students in Jordan, where Olaimat *et al* reported that internet, social and mass media were the major sources of information.^{21,22} The low level of awareness in other study is because the research was conducted in the early part of the pandemic.¹⁰

Only 12.7% heard about COVID-19 from healthcare workers, this has brought to fore the need to involve more healthcare workers in creating awareness as increasing use of social media has the tendency to provide non-evidence based information that may misled the people.²³

The risk perception of the respondents about corona virus was good (73.8%). This may be due to increasing awareness about the disease, and was similar to the findings by Hager *et al* in a bi-national study in Nigeria and Egypt where they reported a good risk perception.²⁴ Dryhurst *et al*, also reported a uniformly high risk perception of COVID-19 in 10 countries around the world.¹⁷ This is similar though lower than the finding by Peres *et al* among Portuguese health professional and the general population.²⁵

The high level of educational status of the participants in our study may explain the awareness of risk perception, as most of them had at least a secondary education.

Despite good perception of the COVID-19 risk, the level of risk reduction practice by most residents (63.2%) was poor. This was similar to the finding by JohnBosco *et al* in Abakaliki, Ebonyi State. Though the study was carried out among pregnant women.²³ The practices by respondents to reduce risks of COVID-19 infection include avoiding contact with people with cough, catarrh and fever (62.5%), frequent hand washing (56.7%), maintaining social distance (48.7%), and use of face mask (50.6%) among other practices. This is similar to the findings of Chou *et al*.²⁶

Although 44.2% of residents and 70.7% said they will respectively sympathize with persons that react to COVID-19 and converse with those that recovered, there is increasing level of stigma and discrimination. Our study found that some participants said they will either kicked out of the community or cursed anyone that recovered from COVID-19, not giving or receive anything from him/her. Others include staying away from him, ostracize and have nothing to do with him or her. These findings were similar to that of Sanject *et al* where they reported avoidance, physical assault, and eviction from rented apartment as well as denial of access to public transport as the common findings in Malawi, Mexico and India.^{17,27} The reason for these may be due to unscientific belief and lack of understanding of COVID-19, it may also be due to believe that 'other people' are more at risk.^{27,28}

Our study found that factors influencing perception about COVID-19 is significantly related to awareness of how the virus is transmitted and how to prevent self from being infected. These findings are similar to that of Hager *et al* in Africa, Dryhurst *et al* and Peres *et al* around the World and Portugal respectively.^{17,18,25}

The practice of risk reduction is statistically associated with level of perception, how COVID-19 is transmitted, age, occupation and ethnicity. This is similar to other studies though data are limited.²⁹

CONCLUSION

To improve risk perception and risk reduction practices among the resident of Kaduna State, there is need to involve more health care professional in educating the residents on risk reduction practices and mitigation of stigma and discrimination. Majority of Kaduna State citizens that are aware of COVID-19 infection cited radio, television and social media as their main sources and few mentioned healthcare workers. However, their risk reduction practices are poor and there is low level of stigmatization. While the risk reduction practice was found to be influenced by level of perception, knowledge of how COVID-19 is transmitted, age, occupation and ethnicity.

Acknowledgement

We thank Kaduna State Government, Kaduna State Ministry of Health and members of COVID-19 Research team for their immense support and contribution.

Funding: The study was funded by Kaduna State Government.

Conflict of interest: There are no conflicts of interest.

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