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Article

Religious landscape in Brazil: Comparing different representative nationwide approaches to obtain sensitive information in healthcare research

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ABSTRACT

Although the basis of religious studies start with demographics, nation-wide data are often extracted from face-to-face interviews (leading to a social-desirability bias) and in studies not originally designed to assess religion. This study aims to understand the religious landscape in Brazil and to investigate the feasibility of carrying out a representative nation-wide survey without interviewers, comparing it with other representative face-to-face surveys. We conducted a nationwide online survey representing all regions in Brazil. These results were compared with five other Brazilian representative surveys. A total of 1169 individuals completed the online questionnaires. The percentage of participants according to the gender and in relation to the Brazilian region was quite similar for all surveys. However, the online survey had the higher level of education among all surveys. In relation to the religious characteristics, the percentage of each variable varied from survey to survey. Those surveys originally designed to assess religion tended to yield more religious affiliations and less ceiling effects. The online survey was able to identify more diverse religious affiliations and more balanced responses in the religious attendance and importance of religion in life. The present study found that, even in nation-wide representative surveys, there are important differences in the results obtained while investigating religion. These differences could be associated with the type of data collection (face-to-face and online), the design of the study (originally designed to investigate religion or not) and options and the type of the questions used.

Background

The study of religion is a multi-disciplinary academic field dedicated to the research of religious beliefs, behaviors, and institutions. Studying populations' religion profile is key for the understanding of human behavior, and religion could influence the society, the culture, the economy, and even health (Knibbe & Versteeg, 2008; Lucchetti & Lucchetti, 2014; McCleary & Barro, 2006). Sociology, psychology, anthropology, economy, and health sciences all need demographic data on religion and religious traditions' diversity.

In medical and health sciences, religious studies have been increasingly gaining scientific attention in the literature (Lucchetti & Lucchetti, 2014; Peres, Kamei, Tobo, & Lucchetti, 2017). Publications show spirituality and/or religiosity (S/R) are associated with several

health outcomes (mental, physical and social) (Koenig, 2012; VanderWeele, Balboni, & Koh, 2017). In addition, there has been increasing awareness about the important global role that faith-based health organization have played in public health (Summerskill & Horton, 2015). In addition, research dealing with population religious profile may lead to a better planning of public health care policies and foster cultural competence, so physicians and other health care practitioners can deliver a more comprehensive and effective care.

Despite the growing number of publications in this field, there are several criticisms to the "Spirituality and Health" studies. Some authors underscore the lack of a clear and consensual definition of spirituality and religiousness (Zinnbauer, Pargament, & Scott, 1999), others highlight the several dimensions and scales used to measure these concepts (Koenig, 2008) and there is also some concerns towards the quality of

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data obtained from the studies (Sloan, Bagiella, & Powell, 1999). Although the basis of these studies may start with its demographics, data available are often extracted from nationwide census or studies not primarily designed to assess religion as the main topic, leading to limitations in their data collection and methodology, therefore not ideally addressing religion's scientific aspects in a broader way.

In the case of Brazil, religious data are available from the following different representative nationwide surveys: a 2006 university based research project (Moreira-Almeida, Pinsky, Zaleski, & Laranjeira, 2010), the 2010 Brazilian national census (IBGE, 2010), the 2010 Pew-Templeton Global Religious Futures ("Pew-Templeton Global Religious Futures", 2010), the 2014 World Values Survey (Ohayon & Roberts, 2014) and the 2016 Datafolha opinion survey (Angkurawaranon et al., 2016). All these surveys were obtained through face-to-face interviews. Although this is very supported by the scientific community, there are concerns whether in the field of religion (which contains personal information), this approach could lead to a significant bias (Jones & Elliott, 2017), in a sense that the responses were not likely to be spontaneous (Kaushal, 2014; Szolnoki & Hoffmann, 2013). One way to minimize this social desirability bias would be using self-administered questionnaires and avoiding the contact with interviewers.

Although previous international studies have already used online surveys to investigate spirituality and religion in the general population (Connor, Davidson, & Lee, 2003; Peres et al., 2017), the online approach is still mostly used for health professionals (McSherry & Jamieson, 2013; Selman, Young, Vermandere, Stirling, & Leget, 2014), students (Anand, Jones, & Gill, 2015) and vulnerable groups (Walker & Longmire-Avital, 2013). Our hypothesis is that online surveys could also be used to safely estimate representative data in the field of religion.

Therefore, this study aims to advance further in this discussion, aiming to understand the religious landscape in Brazil and to investigate the feasibility of carrying out a representative nationwide survey without interviewers, comparing it with other representative face-to-face surveys.

Methods

Study design

This is a Brazilian nationwide cross-sectional survey carried out between June 2016 and August 2016. This study is part of the project "Spiritual and Religious Beliefs, Practices and Experiences in the General Population" sponsored by the Interfaith Coalition on Spirituality and Health (<http://coalizaointerfe.org>), a non-profit Brazilian institution composed of health care professionals and representative members of all religious or non-religious faith practices in Brazil. The Ethics Research Committee of the Albert Einstein Hospital in Brazil approved the study, the study followed the local and international ethical regulations (declaration of Helsinki principles) and all participants signed an online informed consent.

Subjects

To be included, participants must be 18 years old or more, Brazilian residents, have online access (being able to access the email using Internet online devices such as computers, laptops, tablets or cell phones), being able to understand the questionnaire and fill in the questionnaire completely.

Procedures

For this survey, data was collected through a self-administered, online survey coordinated by Qualtrics Panels, one of the main companies offering online instrument services providing quick and inexpensive delivery of experimental questionnaires to geographically distributed participants (Brandon, Long, Loraas, Mueller-Phillips, & Vansant, 2013). Qualtrics sent invitations to participate in the survey

through its panel partner organizations to our targeted population, inviting respondents to complete the online survey in return for monetary incentives/honorarium, as established *a priori* within the panels' agreements.

As surveys were being completed, response patterns were monitored against established quotas and made decisions about sampling in order to meet them. Quotas have been set in order to limit the respondents according to social class distribution, age, gender and geographic location so the population surveyed could meet the same profile of the general adult population in Brazil, according to the 2010 Demographic census (IBGE, 2010).

Instruments

Quality checks questions and attention filters were added. Questions were divided into five randomized blocks so the impact of tiredness of respondents affects equally all questions. Force response validation was included in all questions. The average length of interview was 27 min. The questionnaire addresses a wide range of religious characteristics. Nevertheless, for the present study, the following variables will be used:

- Socioeconomic and demographic data: included age, gender, marital status, education level, employment status, average household income, race/ethnicity and geographic region in Brazil (north, northeast, southeast, center or south regions of Brazil).
- Religious affiliation: Questions about religious affiliation were asked: "What is the best option below to define your current religious affiliation?". Responses options included "Catholic", "Evangelical", "Kardec Spiritist", "Jewish", "Buddhist", "Umbanda", "Candomble", "Atheist", "Agnostic", "Spiritualist", "Christian", "Jehovah Witness", "Seicho-no-ie", "Wicca", "No Religion", and "Others". If response was "Others", then an option for description appeared.
- Importance of religion in life: the question "How important is religion in your life?" was asked with the possible answers: "Not at all", "Not very", "Somewhat", "Moderately" and "Extremely".
- Religious attendance: using the first question of the Duke Religion Index (Lucchetti et al., 2012) "How often do you attend church or other religious meetings?" with possible answers "Never", "Once a year or less", "A few times a year", "A few times a month", "Once a week" and "More than once/week".

Data analysis

In order to compare our results with the other Brazilian representative surveys, we have assessed data or results from five other surveys:

- a 2006 university based research project (Moreira-Almeida et al., 2010) originally designed to assess alcohol patterns in the Brazilian population
- the 2010 Brazilian national Census (IBGE, 2010) originally designed to assess living, financial and socioeconomic conditions of the Brazilian population
- the 2010 Pew-Templeton Global Religious Futures ("Pew-Templeton Global Religious Futures", 2010) that retrieved data from the Brazilian National Census and the Family Budget Survey project
- the 2014 World Values Survey (Ohayon & Roberts, 2014) originally designed to understand the beliefs and values of the world, including a Brazilian data.
- the 2016 Datafolha opinion survey (Angkurawaranon et al., 2016) originally designed to understand the religious shifting that Brazil is experiencing.

The characteristics and sample size of each survey can be visualized in Table 1.

Table 1
Characteristics and sample size of each survey.

	Sample	Organization	Method	Interviewer	Age	Originally designed for religion	Representative of Brazilian regions
WVS 2014	1496	Non-profit	Face-to-face	Yes	> 18	Yes	Yes
University Group 2006	2346	University	Face-to-face	Yes	> 18	No	Yes
2016 Online	1196	Non-profit	Online	No	> 18	Yes	Yes
DataFolha 2016	2828	Private	Face-to-face	Yes	> 16	Yes	Yes
Pew 2010	–	Non-profit	Face-to-face	Yes	All ages	No	Yes
Census 2010	67 million	Governmental	Face-to-face	Yes	All ages	No	Yes

Then, we compared the sociodemographics, the representativeness, the religious affiliations, the importance of religion in life and the religious attendance obtained in each survey. Since we have slight different questionnaires, some adjustments were made in order to merge the categories. For instance, the World Values Survey has an option of “once a week or more” for religious attendance. The Duke Religion Index has two options “once a week” and “more than once a week”. We opted to merge these both categories in one “once a week or more”.

Finally, using our dataset, we tested whether there are significant associations between religious affiliation and socio-demographic data, performing Pearson’s Chi-square statistics. The values for adjusted residuals were standardized and showed normal distribution with mean = 0, and standard deviation = 1, thus, a value > 1.96 implies significant associations between categories. The higher the value, the higher the association. A *p*-value < 0.05 was considered statistically significant, and *p*-values from standardized scores were adjusted by Bonferroni’s method.

Results

A total of 1169 (93.3% of total) participants completed the online questionnaires. Sample’s mean age was 40.7 (varying from 18 to 88) years, comprising of 52.1% women. Table 2 shows the

Table 2
Sociodemographic characteristics of the online survey in comparison with the other surveys.

	WVS 2014	University Group 2006	2016 Online	DataFolha 2016	Pew 2010	Census 2010
Sample Size	1496	2346	1196	2828	^a	67,600,000
Gender						
Male	47,7	47,6	47,9	48	49,4	49
Female	52,3	52,4	52,1	52	50,6	51
Education						
University	17	10,5	54,8	20		9,3
Middle and High School	38,1	52,7	44,6	45		45,8
Elementary or no education	44,9	36,8	0,8	35		44,9
Region						
South	Not asked	15,2	14,3	15		14,4
Southeast		44,6	43,4	43		42,1
Northeast		26,2	26,9	27		27,8
Central-west		6,3	7,8	8		7,4
North		7,7	7,5	8		8,3
Age						
< 14 years					26,6	24,1
15–64	88,4		91,5		66,1	68,5
16–59		85,5		85		
> 60		14,5		15		
> 65 years	11,6		8,5		7,3	7,4

^a Sample was composed by the Demographic Census of 2010 and Pesquisa de Orçamento Familiar 2009.

sociodemographic characteristics of our database in comparison with the other surveys. The percentage of participants according to the gender and in relation to the Brazilian region was quite similar for all surveys, with exception of the Pew and World Values Survey, which did not ask for the region. In relation to age, some surveys investigated only adults whereas others included children, likewise each survey used a different way to categorize age, making a comparison difficult. Nevertheless, we can see that most surveys have the same percentage of older persons. Finally, the comparison of educational levels reveal that the Demographic Census had the lower level of education and the online survey had the higher level of education of all surveys.

Same comparisons were carried out for religious affiliations (Table 3 and Supplementary Fig. 1). There is a predominance of Catholics in all surveys, but it is possible to note that this percentage varies from each survey. Those surveys not originally designed to assess religion (Demographic Census and university based research project) tend to yield more Catholics in comparison with those designed for this matter (World Values Survey, online survey and Datafolha). Interestingly, the percentage of those participants with no religious affiliation or with other types of religious affiliations are lower in surveys not originally designed to assess religion.

Concerning the importance of religion (Table 3 and Supplementary Fig. 2), we found that the World Values Survey and the online survey yield similar results and the university based research project and the Datafolha survey found ceiling effects. In the case of Datafolha, this could be justified by the fact they used another type of measure ranking it in 0–10 that was converted by the authors of the present article in order to merge it with other questionnaires. Finally, we found that the online survey resulted in lower religious attendance than other surveys (Table 2 and Supplementary Fig. 3).

The associations between religious affiliations and socio-demographic data in this online survey are summarized in Table 4. Atheists were associated to single, undergraduate young men. More women were found among Kardec Spiritists. There were more divorced individuals in Jewish and Umbanda/Candomblé members, whereas more married couples in Evangelicals. Less educational level is present in evangelicals/protestants and Candomblé and Umbanda members, as more educational levels in Kardec Spiritists. More disabled status found in Kardec Spiritists affiliation. Jewish and Jeovah Witnesses members were more likely to work as voluntary members, atheists were more likely to be students, and Umbanda unemployed. Catholics and Jews had higher income, whereas Evangelicals lower income. Religion was significantly associated with ethnic origin, Catholics-White, Umbanda/Candomblé-Black, Buddhism-asian, and Protestants-Pardo.

Discussion

The present study found that, even in nationwide representative surveys, there are important differences in the results obtained while investigating religion. These differences could be associated with the type of data collection (face-to-face and online), design of the study (originally designed to investigate religion or not) and options and the type of the questions used. These findings reveal that the study of a personal issue such as religion should be carried out in a planned manner, trying to minimize the social desirability bias and using

Table 3
Religious characteristics and sample size of each survey.

	WVS 2014	University Group 2006	2016 Online	DataFolha 2016	Pew 2010	Census 2010	Total Mean
Religious affiliation (%)							
None	14,3	5	12,4	15	7,9	8,0	10,4
Buddhist	0,2	0	0,8	0	0,1	0,1	0,2
Evangelical/Protestant	27	22,9	19,1	29	23,0	22,2	23,9
Jew	0,1	0	0,7	0	0,1	0,1	0,2
Muslim	0,1	0	0	0	0,0	0,0	0,0
Other	1,3	1,2	12,2	2	3,9	2,6	3,9
Afro Religions	0,5	0,5	2,2	2	0,0	0,3	0,9
Roman Catholic	53	67,9	44	50	65,0	64,6	57,5
Spiritist	3,7	2,5	8,6	2	0,0	2,0	3,1
Importance of religion in life (%)							
Very	53,1	83,8	56	98	None	None	72,7
Some	37,1	14,1	26,1	2			19,8
Not important	6,9	0,8	7,8	0			3,9
Not important at all	2,9	1,4	10,1	0			3,6
Religious attendance (%)							
Once a week or more	50,1	37,2	33,3	65	None	None	46,5
Once-twice a month	15,3	18,2	13,9	21			17,1
Sometimes	26,7	32,7	39,4	8			26,8
Never	7,9	11,9	13,5	5			9,6

standardized measures.

Our online survey shows a different prevalence of religious affiliations in comparison to the Brazilian Demographic Census. We found a smaller percentage of Catholics and a higher percentage of Spiritists, other religious traditions and those with no religious affiliations. These findings could be explained by several factors.

First, we must consider our study methodology. Although our sample was designed to be representative of the Brazilian population (as seen in the Brazilian regions investigated), our panel was carried out online. This may underrepresent some persons with limited access to the Internet (i.e. those with less economic condition), those with very little digital literacy rates and those in rural areas, representing a more urbanized sample as visualized by the high educational level of the population of this online survey.

Second, we believe that our data collection could have minimized the social desirability bias with an anonymous self-report questionnaire, instead of a face-to-face interview. Individuals tend to feel embarrassed in answering to the interviewer some of their beliefs and different affiliations. For example, although Brazil exhibit the lowest levels of hostility towards religion among the 25 most populous countries in the world (Cooperman, Kishi, & Schiller, 2015), there are moderate levels of religion-related intimidation, in particular against Afro-Brazilian religions (Phillips, 2015). This may have rendered the

adepts from these religions less intimidated to respond online questionnaires, which may explain the nearly 5-times increase of Umbanda and Candomblé in this survey compared to 2010 Demographic Census data. This might also be the case for the fact that there was no filling from Muslims, which was also absent in the Latin America’s survey (“Pew-Templeton Global Religious Futures”, 2010).

Concerning the religious affiliations, the religion profile of Latin America, and more specifically of Brazil, is dynamically changing (Knibbe & Versteeg, 2008). Here, we found an even more narrowed difference between the two leading religious groups in Brazil (Catholicism and Protestantism), which was 80% in the 70s (IBGE, 2010), 42% according to the Census in 2010 and 25% according to our survey. This may represent a decline in Catholicism and an increase in other belief systems.

Likewise, Agnostics and Atheists appeared with significantly more numbers, probably because of the education profile and the online anonymous survey, where respondents could choose freely their affiliation on a self-administered questionnaire (Giacomini Filho & de Martin, 2015). However, other surveys also found an increase in Atheist and Agnostics, showing a trend in secularization of Western societies, mostly driven by the “millennials” generation.

It is also interesting to note that the surveys not originally designed to investigate religious characteristics tend to result in lower numbers

Table 4
Statistically significant associations between religious affiliation and socio-demographic data. Numbers in square brackets represent the adjusted residual values of the χ^2 test. mw: minimum wage.

Affiliation	Gender	Marital status	Educational level	Employment status	Income	Ethnicity/Race
Catholic	Male [3]	–	–	–	9–18 mw [2.3]	White [2.7]
Evangelical	–	Married/Cohabiting [2.8]	Elementary [2]; Elementary (unfinished) [2.8]; High School [3.7]	–	< 2 mw [2.4]	Pardo [3.3]
Kardec Spiritist	Female [2.7]	–	Postgraduate [2.5]	Disabled [2.1]	–	–
Christian	–	–	–	–	–	–
Buddhist	–	–	–	–	–	Asian [3.7]
Jewish	–	Divorced [2.5]	–	Voluntary work [3.6]	9–18 mw [2.2]	–
Umbanda/Candomblé	–	Divorced [2.3]	Elementary [2.5]; High School [2]	Unemployed [2.6]	–	Black [4.4]
Jehovah Witness	–	–	Elementary [4.9]; High School [2.8]	Voluntary work [7.0]	< 2 mw [2.4]	–
Spiritualist	–	–	Postgraduate [2.4]	–	–	–
Atheist	Male [3.4]	Single [3.3]	Undergraduate (unfinished) [3]	Student [2.7]	–	–
Agnostic	–	Single [3.2]	Undergraduate [2.5]	–	–	–
No Religion	–	Single [3.6]	–	–	–	–
Others	–	–	–	–	–	–

of different religious affiliations and higher levels of importance of religion in life, supporting the social desirability hypothesis. This reinforces the fact that a good survey must be designed to investigate its primary objective, instead of relying in data from single items or sub analyses. Of course, in the real world, this should not be possible, since the funding from religious studies is usually difficult to obtain. Therefore, secondary analyses using religious measures are still important, but must be evaluated with caution.

Below, we will discuss the association between religious affiliations and socio-demographic characteristics found in our online survey.

Gender

Gender was significantly associated with some religious affiliations. If on one hand, there were more men among Catholics and Atheists, on the other hand, there were more women among Kardec Spiritists. The Male preponderance of Atheists found in this study has been also found in several other surveys (Arcaro, 2010). Although in most countries, Catholic women are more likely than Catholic men to attend religious services (Lugo, 2006), there is a male predominance in Catholics. The association found between women and Kardec Spiritists has never been reported previously. One may speculate women trend towards a more spiritual life, may follow spiritual practices, have more spiritual beliefs and/or experiences. This needs to be further investigated in future studies.

Marital status

Regarding marital status, significant differences were observed in Jewish and Umbanda/Candomble with more divorced members, Atheists and Agnostics with more individuals reporting being single and more married couples in Evangelicals/Protestants.

Education

Less education was found in evangelicals/protestants and in Jehovah witnesses, Candomble and Umbanda members. Those religious beliefs and practices may lead to less educated individuals be more attracted to it. More educational levels were found in Kardec Spiritists, this could be explained by the fact that highly elite intellectual Brazilians brought Allan Kardec studies to Brazil in the XIX Century (Lewgoy, 2008). Atheists and agnostics were found to be on the undergraduate education level, favoring the theory of secularization among men young adults (Arcaro, 2010).

Economics

Jewish and Jehovah witness members were more likely to work as voluntary member, atheist be students, Kardec Spiritists disabled and Umbanda unemployed. Regarding income, Catholics and Jews had higher income, as opposed to Evangelical / Protestants with lower income. The interpretation of this data relies in the historical aspects, immigration patterns but merits further analysis to establish causality and is supported by previous data (Almeida & Monteiro, 2001).

Ethnicity

From a historical and sociocultural perspective, the data on ethnic/racial groups outlines the associations between religious affiliations inherited from colonization/migration processes. The association of White with Catholicism and Black with the Afro-Brazilians religions Candomblé and Umbanda could be rooted in the Portuguese colonization and slavery trade (Brown and Bick, 1987), whereas Asian and Buddhism may be related to the migration of the Japanese. The association of Evangelical with *Pardos*, the largest racial group with the lowest education levels in Brazil, pinpoint the more recent widespread

of Pentecostal and Neo-Pentecostal denominations, which consist of segments stemmed from Protestant revivalist movements in U.S. and Great Britain in the late 19th century (Lugo, 2006).

Feasibility of the online survey

Implementing an online survey to investigate religion in Brazil proved to be an alternative to future studies. It should be highlighted that we identified a problem with this approach since more educated persons were included in the online survey, which may be very different from the Brazilian population. However, other sociodemographic characteristics were very similar and the survey performed well as compared with other surveys originally designed to assess religion such as the World Values Survey.

The advantages of conducting such online approach rests in the low cost (as compared to high demanding face-to-face surveys), the fact that is less time-consuming and the use of an anonymous questionnaire may be responsible for more sincere answers by the participants, minimizing the social desirability bias. These advantages and disadvantages should be taken in consideration when planning a survey to investigate religious backgrounds.

In fact, other articles have already attempted to compare face-to-face against online interviews with mixed results. A 1999 meta-analysis (Richman, Kiesler, Weisband, & Drasgow, 1999) found that there was less social desirability distortion on computerized versions of interviews than on face-to-face interviews, results not corroborated by a 2014 meta-analysis (Dodou & de Winter, 2014) that found no difference in the social desirability scores between both approaches. However, it seems that some delicate and sensitive questions may lead to differences. In the field of medicine, Henderson et al. (Henderson, Evans-Lacko, Flach, & Thornicroft, 2012) compared both procedures and found that mental health stigma sensitive questions were better assessed using online self-complete methods than in-person interviews. Social desirability seems also to be a problem while investigating religious orientation as perceived in several previous studies (Fastame, Hitchcott, & Penna, 2017; Jones and Elliott, 2017; Presser & Stinson, 1998).

Limitations

The present study has potential limitations that should be considered. This is a cross-sectional survey and inferences concerning causality cannot be made. Likewise, since this was an online survey, it is possible that some groups of the population (residents from rural areas, population with little access to the internet, those with lower socioeconomic levels and older adults) were included in a lower frequency in the survey. Finally, this study was carried out in Brazil. Thus, more online surveys from other countries are welcome to replicate our findings in other cultural, religious and socioeconomic populations.

Clinical implications

Our findings also have clinical implications for health/social care professionals. Providers should be aware that obtaining sensitive information of their patients is not an easy task. As evidenced by our study, an online anonymous survey could result in different responses and has the potential to reduce the social desirability bias. Sensitive information (e.g. religion) may be approached in a gentle way, avoiding judgments and preconceptions, based on a trustful relationship between the patient and the health professional (Lucchetti, Bassi, & Lucchetti, 2013; Moreira-Almeida, Koenig, & Lucchetti, 2014). Explaining why such information is important and how this information will be handled in the clinical context could increase the likelihood of a sincere response by the patient.

Conclusions

In conclusion, the present nationwide online survey attempted to

reduce the social-desirability bias while investigating religion, implementing an anonymous online survey representative of the Brazilian population. We found that our survey produced consistent results (quite similar to other surveys) despite the fact that it included high-educated participants. The fact that this approach is less time consuming and cheaper than the traditional face-to-face interviews can help in the further development of the field of religious studies.

Ethical statement

The Ethics Research Committee of the Albert Einstein Hospital in Brazil approved the study and an online informed consent was signed by participants.

Competing interests

The authors declare that they have no competing interests.

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Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.ssmph.2018.08.007.

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