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The role of questionnaire length and reminders frequency on response rates to a web-based epidemiologic study: a randomised trial

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ABSTRACT

Introduction: Web-based epidemiologic surveys are being widely used, but still present lower response rates compared to traditional methods. Their design can influence survey response rates.

Objective: Analyse the influence of questionnaire length, frequency of reminders, and the interaction between them, on the response rates of five web-based questionnaires.

Methods: This is a 2×2 factorial study. Participants registered into the *coortesnaweb* platform (n=1,277) were randomly assigned to respond to short or long questionnaires, and to receive high or low frequency of reminders. We analysed the influence of these factors on the response rates of five web-based questionnaires applied in a longitudinal manner. The relative risk of responding to an additional questionnaire was also analysed.

Results: The mean response rate was 54.3%. Sending reminders more frequently was positively associated with the response rates for the first questionnaires. Questionnaire length did not influence response rates. We found no interaction between questionnaire length and frequency of reminders. Women and highly educated participants had, respectively, 13.0% and 28.0% increased probability of responding an additional questionnaire.

Conclusions: We obtained high response rates for the first questionnaires. Sending reminders more frequently and providing conditional incentives should be employed. Long questionnaires did not jeopardize response rates of web-based questionnaires.

KEYWORDS
E-epidemiology; Epidemiology; Response Rate; Survey methodology; Web surveys

Introduction

Epidemiologic surveys are facing a constant decrease on their response rates, estimated to vary between one and two percentage points per year (Morton, Cahill, & Hartge, 2006; Wallander, Tikkanen, Mannheimer, Ostergren, & Plantin, 2015). Several factors influence the decrease in response rates, including the way the data is collected. Traditional epidemiologic surveys – conducted by mail, face-to-face or telephone interviews – are facing difficulties with the inefficiency of the mailing system, the decrease on the coverage of landline telephone, and with barriers to contact hard-to-reach populations.

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The Internet is a potential candidate to overcome these difficulties. According to the World Bank, Internet access is increasing worldwide, shifting from 29% in 2010 to almost 50% in 2017 (https://data.worldbank.org/indicator/it.net.user.zs). Due to this increase, some studies mention that the Internet has the potential to overcome geographical boundaries with less complicated logistics (Morgan, Jorm, & Mackinnon, 2013; Watson, Robinson, Harker, & Arriola, 2016). However, using the Internet for research purposes also involves some limitations. In countries where the Internet coverage is not universal or where its access is not available for every person, it is possible that the digital divide occurs (Duplaga, 2017; Nguyen, Mosadeghi, & Almario, 2017). Another limitation is related to the lower response rates obtained by web-based surveys compared to studies that use traditional data collection methods (Blumenberg & Barros, 2018). However, the difference in the rates can be reduced if web-based studies are well designed (Dillman, Smyth, & Christian, 2014).

Edwards and colleagues conducted a comprehensive literature review on methods to increase response rates of electronic questionnaires, including web surveys (Edwards et al., 2009). The effects of incentives, survey topic, the appearance of the questionnaire, origin and way of communication were widely evaluated. In contrast, the influence of questionnaire length and frequency of reminders were not enough covered. Only two randomised trials analysed questionnaire length. The first, designed as a market research, described a 57% higher response rate for short questionnaires compared to long questionnaires (Deutskens, Ruyter, Wetzels, & Oosterveld, 2004). The second study, which sampled persons operating a personal website and assessed their motivations to do so, also found a 95% higher response rate for short questionnaires compared to long (Marcus, Bosnjak, Lindner, Pilischenko, & Schütz, 2007). Considering both findings, Edwards and colleagues calculated a pooled estimate showing that short questionnaires have 73% higher response rates compared to long questionnaires (Edwards et al., 2009). This finding agrees with the result of other literature review published one year later (Fan & Yan, 2010).

Although the reviews showed a negative relation between questionnaire length and response rates in web-based surveys, there are mixed results about this association in the literature. A web-based study investigating prostate cancer in a sample of 28,134 Swedish men found that response rates to longer questionnaires were almost five percentage points higher compared to shorter questionnaires (Koitsalu, Eklund, Adolfsson, Grönberg, & Brandberg, 2018). In contrast, other published studies from Canada and United States found that the response rates did not differ according to questionnaire length (Hardigan, Popovici, & Carvajal, 2016; Tai et al., 2018; Yetter & Capaccioli, 2010).

One aspect that is a consent in the literature is that sending reminders to non-responders positively affects the response rates (Edwards et al., 2009; Fan & Yan, 2010; Sebo et al., 2017; Van Mol, 2016). However, studies fail to understand how frequent these reminders should be sent in order to increase response rates and avoid being a burden. Some studies analysed the number of reminders but did no distinction on the frequency that they were sent (Sebo et al., 2017; Van Mol, 2016). Also, the studies that analysed the influence of reminders and questionnaire length on response rates were limited to cross-sectional analyses, failing to understand the influence of these exposures in a longitudinal basis.

In order to fill this gap in the literature, the objective of this study was to analyse the influence of questionnaire length and frequency of reminders, and the interaction between them, on the response rates of five web-based questionnaires applied in a longitudinal manner using the *coortesnaweb* platform.

Methods

This study was conducted using the *coortesnaweb* platform, a gamified web-based platform developed to collect data from the members of the 1993 Pelotas birth cohort (Gonçalves et al., 2017). After registering into the platform, cohort members respond to questionnaires and earn

virtual points used to unlock personal results about their health. To be eligible to participate of the *coortesnaweb*, the members of the birth cohort had to have: i) participated in the 2015 face-to-face follow-up (when they were 22 years old); ii) Internet access (either at home, work, or mobile device); and iii) responded to the 2015 interview without help of a third individual. Out of the 3,810 cohort members interviewed in the 2015 face-to-face follow-up, 3,537 were eligible (67.4% of the original cohort) for the *coortesnaweb* project.

Recruitment of the eligible individuals lasted seven months (from January to July-2018). During this period, we sent messages briefly presenting the *coortesnaweb* platform with an invitation to register into the platform. The messages were sent first using e-mails, followed by Whatsapp messages, and then by Facebook messages (Facebook Inc. 2018. Menlo Park, CA, United States). Each individual received at most six recruitment messages. If the registration into the *coortesnaweb* platform was performed before the sixth invitation, no further recruitment messages were sent. Although the recruitment process had finished in July-2018, registration into the platform is still open (but without active invitation). Until September-2018, 1,277 individuals (36.1% of the eligible individuals) had registered into the platform and are considered in the analyses of this study.

In order to assess the influence of questionnaire length and frequency of reminders on response rates, this study followed a 2 × 2 factorial design. Using this approach, it is possible to understand the influence of two independent variables (questionnaire length and frequency of reminders) on an outcome (response rate). To do so, we created four groups combining the different lengths of questionnaires and frequencies of reminders. Thus, at registration, individuals were randomly assigned to one of the following arms: i) short questionnaires and low frequency of reminders; ii) short questionnaires and high frequency of reminders; iii) long questionnaires and low frequency of reminders; and iv) long questionnaires and high frequency of reminders. We created a list using block randomisation (block size = 4) to guarantee the balance in terms of samples sizes between the four arms. The randomisation process was blind, and registered individuals did not know to which group they were allocated. We applied five questionnaires in a longitudinal manner during almost nine months of follow-up.

Our main outcome is the response rate, calculated for each questionnaire using response rate number 2 (RR2) formula defined by the American Association for Public Opinion Research (AAPOR) (The American Association for Public Opinion Research, 2016). This formula returns the proportion of complete plus partial interviews of the total number of individuals eligible to respond. According to the AAPOR's definition, an interview was considered complete if more than 80% of the items of the questionnaire were responded, partial if between 50% and 80% of the items were responded, and not responded if less than 50% of the items of the questionnaire were responded (The American Association for Public Opinion Research, 2016). Items left blank due to missing by questionnaire design were not considered in the calculus. Eligible individuals were all those registered into the *coortesnaweb* platform. A secondary outcome was the total number of questionnaires responded by each participant registered into the *coortesnaweb* platform, which ranged from zero to five questionnaires.

We applied five questionnaires using two lengths, a short and a long version. The first questionnaire was about alcohol consumption, the second about physical activity, the third about Internet use, the fourth about violence, and the fifth about smoking. Only one version (short or long) of the questionnaire was displayed to each individual, depending on the arm to which he/she was allocated. Short questionnaires ranged from 11 to 17 items, while long questionnaires ranged from 21 to 33 items. According to results from a pilot study, on average, short questionnaires took 4 min to be completed, while long questionnaires took 14 min.

Reminders were sent to non-respondents using the same methods used for recruitment: e-mails, Whatsapp messages, and Facebook messages. We sent, at most, two reminders for each questionnaire. If the registered individual had responded to that questionnaire, no further reminders were sent until a new questionnaire was published into the platform. Individuals

allocated to the high-frequency group received reminders every 15 days, while those in the low-frequency group received reminders every 30 days.

Results are presented using intention to treat analyses, where all randomised individuals are analysed according to their initial assignment, regardless if they have responded to the surveys or not. We describe crude response rates for each questionnaire, and according to the arms and main effects of the factorial design. We calculated the relative risk of responding each questionnaire according to questionnaire length and frequency of reminders using Poisson regression with robust variance. As the questionnaires were applied on a longitudinal basis, each questionnaire was published at a different time point. For this reason, the time available to respond to each questionnaire was different. For instance, if a questionnaire was online for eight months, the probability that the participants completed that questionnaire would be higher compared to a questionnaire that was online for only three months. To account for the different exposure periods of the questionnaires, we calculated the proportion of the total study time that each questionnaire was online and used it as an offset. Also, using Poisson regression with robust variance, we analysed the relative risk of responding an additional questionnaire according to the socio-demographic characteristics of the sample. In this case, we used as offset the proportion of the total study time that each participant was registered into the *coortesnaweb* platform – since participants registered for a longer period would have a higher probability of responding more questionnaires compared to those registered for a shorter period.

The socio-demographic characteristics analysed were sex (female, male), schooling categorised according to years of study (0–8, 9–11, and 12 or more), skin colour, and socioeconomic position. Schooling was calculated as the total years of study until the participants were 22 years of age, and divided into these categories as they represent the three main stages of the Brazilian educational system: elementary school (lasting eight years), high school (lasting three years), and higher education (lasting two or more years). Skin colour was self-reported as white, brown, black and other. This variable was considered in the analyses as it is commonly used as an indicator of social disparities in Brazil (Travassos & Williams, 2004). Socioeconomic position was constructed as a continuous score calculated using principal component analysis, which was then divided into three equally sized groups (terciles). The score was based on the ownership of a set of assets (e.g. computers, vehicles, etc.), on the characteristics of the household (e.g. number of rooms, sanitation), and on the education of the participant. We used this score as it is more stable compared to an income measure, as it represents the purchasing power of the participants during their life. We also decided to use this score because it is less prone to be biased compared to income. Further details about the score calculation can be obtained in a previously published article (Barros & Victora, 2005). We performed the analyses using Stata 15.1 software (StataCorp. 2017. Stata Statistical Software: Release 15. College Station, TX: StataCorp LLC).

The Research Ethics Committee of the School of Medicine of the Federal University of Pelotas approved the *coortesnaweb* project (protocol number: 79124917.5.0000.5317). This study is registered into the Brazilian Registry of Clinical Trials (register number: RBR-3dv7gc). All participants had to agree to a consent form in order to register into the platform.

Results

From January to September 2018, 1,277 individuals registered into the *coortesnaweb* platform. As described in Table 1, 319 participants composed each group of this 2 × 2 factorial design study, except for the group that received long questionnaires and low frequency of reminders, which was composed by 320 participants. There was no difference between the randomisation groups regard to sex, schooling, skin colour or socioeconomic position.

The mean response rate, considering all five questionnaires together, was 54.3%. Considering the questionnaires individually, the response rates for the first two were near to 70.0%, reducing for the next questionnaires and reaching 31.2% in the last questionnaire (Table 2).

Table 1. Characteristics of the sample according to randomisation group. Pelotas, Brazil, 2018.

	Short quest. Low freq. n (%)	Long quest. Low freq. n (%)	Short quest. High freq. n (%)	Long quest. High freq. n (%)	P-value[#]
Total	319 (100.0)	320 (100.0)	319 (100.0)	319 (100.0)	
Sex					0.706
Male	119 (37.3)	114 (35.6)	125 (39.2)	112 (35.1)	
Female	200 (62.7)	206 (64.4)	194 (60.8)	207 (64.9)	
Schooling (years)					0.869
0–8	40 (12.6)	46 (14.4)	41 (12.9)	47 (14.8)	
9–11	133 (42.0)	141 (44.0)	130 (40.9)	137 (43.2)	
12+	144 (45.4)	133 (41.6)	147 (46.2)	133 (42.0)	
Skin colour					0.864
White	209 (69.9)	212 (70.1)	207 (68.0)	210 (68.5)	
Brown	49 (16.4)	40 (13.3)	44 (14.5)	43 (14.1)	
Black	29 (9.7)	40 (13.3)	37 (12.2)	40 (13.1)	
Other	12 (4.0)	10 (3.3)	16 (5.3)	13 (4.3)	
Socioeconomic position (terciles)					0.090
1st (poorest)	96 (30.3)	113 (35.3)	105 (33.1)	110 (34.8)	
2nd	95 (30.0)	118 (36.9)	109 (34.4)	101 (32.0)	
3rd (richest)	126 (39.7)	89 (27.8)	103 (32.5)	105 (33.2)	

Freq. – frequency; Quest. – questionnaire
[#]Chi-squared test for heterogeneity

Table 2. Response rates per questionnaire. Pelotas, Brazil, 2018.

	Response rate %	Time online Months
Q1	69.4	8.7
Q2	66.1	8.7
Q3	55.8	7.5
Q4	48.9	6.4
Q5	31.2	3.2
Mean	54.3	

Q1-Q5 – questionnaires 1 to 5

In Figure 1(a) we present the response rate for each questionnaire considering the four arms of the factorial design. For the first four questionnaires, those who received a high frequency of reminders, regardless of the length of the questionnaires, had higher response rates compared to the other groups, but without statistical significance. We found no interaction effects between questionnaire length and frequency of reminders in any of the five questionnaires applied (refer to Supplemental Material 1).

Analysing the frequency of reminders alone (Figure 1(b)), the prevalence of response was 9.0% and 11.0% higher for the high-frequency group compared to the low frequency, considering the first two questionnaires (detailed results presented in Supplemental Material 1). There were no response rate differences according to the length of the questionnaire (Figure 1(c)).

Overall, women had a 13.0% increased probability of responding an additional questionnaire compared to men (Table 3). Differences on the probability of response according to sex were also present among individuals receiving reminders with a low frequency or that responded to short questionnaires, being 22.0% higher for women compared to men.

The probability of responding an additional questionnaire was positively associated with the level of schooling (refer to Table 3). Considering all randomisation groups together, participants that studied for 12 years or more had a 28.0% higher probability of responding an additional questionnaire compared to those that studied eight years or less. In contrast, the skin colour and the socioeconomic position did not influence the probability of responding an additional

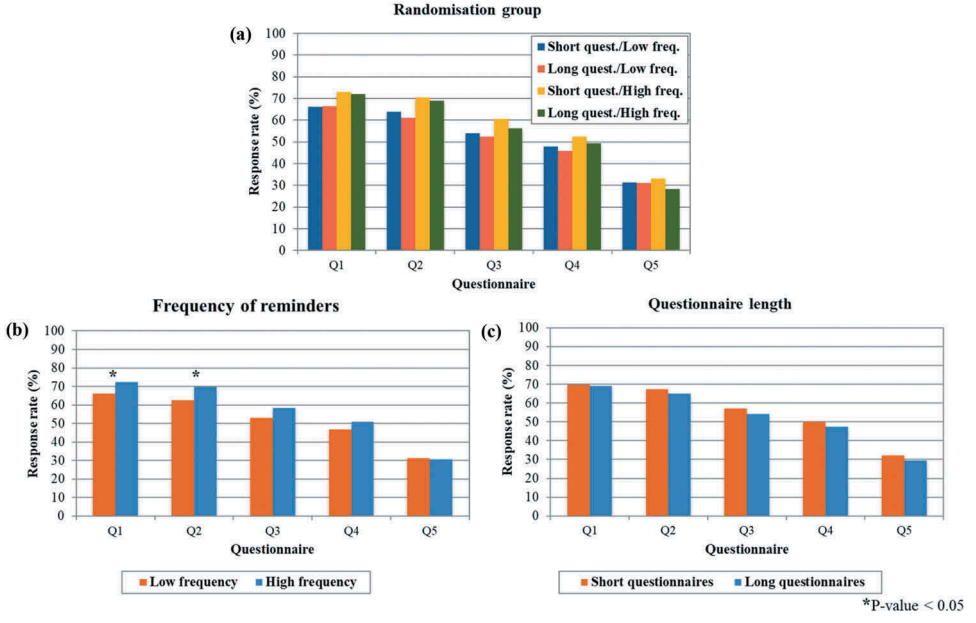

Figure 1. Response rate for each questionnaire (Q1-Q5) considering (a) the four randomization groups and the individual effects of (b) frequency of reminders and (c) questionnaire length. Pelotas, Brazil, 2018.

Table 3. Relative risk of the number of questionnaires responded according questionnaire length, frequency of reminders and socio-demographic characteristics. Pelotas, Brazil, 2018.

	Overall RR (95%CI)	Long quest. RR (95%CI)	Short quest. RR (95%CI)	Low freq. RR (95%CI)	High freq. RR (95%CI)
Sex					
Male	1.00	1.00	1.00	1.00	1.00
Female	1.13 (1.03, 1.23)	1.05 (0.92, 1.18)	1.22 (1.08, 1.38)	1.22 (1.07, 1.40)	1.06 (0.95, 1.18)
Schooling (years)					
0–8	1.00	1.00	1.00	1.00	1.00
9–11	1.11 (0.94, 1.31)	1.09 (0.86, 1.38)	1.13 (0.90, 1.43)	1.23 (0.95, 1.59)	1.03 (0.83, 1.27)
12+	1.28 (1.09, 1.50)	1.29 (1.02, 1.62)	1.26 (1.01, 1.58)	1.43 (1.11, 1.83)	1.16 (0.95, 1.42)
Skin colour					
White	1.00	1.00	1.00	1.00	1.00
Brown	0.93 (0.82, 1.06)	1.00 (0.83, 1.20)	0.88 (0.73, 1.05)	0.89 (0.73, 1.09)	0.97 (0.82, 1.15)
Black	0.94 (0.82, 1.07)	0.97 (0.81, 1.17)	0.91 (0.74, 1.11)	1.01 (0.82, 1.24)	0.88 (0.74, 1.05)
Other	0.81 (0.64, 1.02)	0.97 (0.72, 1.31)	0.68 (0.48, 0.97)	0.67 (0.43, 1.04)	0.92 (0.71, 1.18)
Socioeconomic position (terciles)					
1st (poorest)	1.00	1.00	1.00	1.00	1.00
2nd	1.11 (1.00, 1.23)	1.06 (0.91, 1.23)	1.16 (1.00, 1.35)	1.16 (0.99, 1.37)	1.06 (0.93, 1.21)
3rd (richest)	1.09 (0.99, 1.21)	1.04 (0.90, 1.21)	1.14 (0.98, 1.31)	1.20 (1.03, 1.41)	1.00 (0.87, 1.14)

CI – confidence interval; Freq. – frequency; Quest. – questionnaire; RR – relative risk

questionnaire. Information regarding the quality of adjustment of the models are provided in Supplemental Material 2.

Discussion

Our study obtained high response rates for the first questionnaires applied, reaching almost 70.0% for the first two questionnaires, but 31.2% for the fifth questionnaire. Sending reminders more often was associated with higher response rates, and the questionnaire length did not

influence the response rates. Women and individuals from the higher schooling category responded to more questionnaires compared to men and individuals with lower schooling, showing that participation in web-based studies differs according to the socio-demographic characteristics of the sample.

Although the response rate alone is not an evidence of study quality and validity, it is an important component of the total survey error (Biemer, 2010; Morton, Bandara, Robinson, & Carr, 2012). By achieving high response rates, the probability of nonresponse error is reduced and, in turn, the probability of obtaining biased estimates is also reduced (Beebe et al., 2012; Keiding & Louis, 2016). In our study, we obtained very high response rates for the first two questionnaires, but decreasing response rates for the following three questionnaires. Due to the decreasing response rates during the course of the study, additional retention methods are needed to keep participants motivated in web-based studies with longitudinal designs. One alternative would be to give monetary incentives, which is known to increase response and retention rates in web-based studies (David & Ware, 2014; Edwards et al., 2009). Another aspect that should be considered is the composition of the target sample since response and retention rates differ according to the socio-demographic characteristics of the sample, and to their interest on the subject of the study (Keusch, 2015). For instance, a Danish study investigating aspects related to pregnancy among women willing to get pregnant reported very high response rates (87.5%) in a follow-up questionnaire. This shows that once the characteristics of the target sample are in line with the subject of the study, participation in web-based surveys is not an issue (Mikkelsen et al., 2009).

In our study, we found that women and participants with higher schooling responded to more questionnaires compared to men and individuals that studied from zero to eight years, respectively. The higher participation of these groups was already described by other web-based epidemiologic studies in the literature (Ebert, Huibers, Christensen, & Christensen, 2018; Rübsamen, Akmatov, Castell, Karch, & Mikolajczyk, 2017). Hence, web-based studies that focus on producing prevalence estimates should be interpreted in light of these differences to avoid the generalisation of biased findings. Also, it is important to design strategies focused on the groups that are known to have lower participation. Sending more reminders than usual or contacting participants more frequently can positively influence response rates among these groups (Aerny-Perreten, Domínguez-Berjón, Esteban-Vasallo, & García-Riolobos, 2015; Toledo et al., 2015).

We found no influence of the questionnaire length on response rates for any of the five questionnaires. Thus, in the context of our study, using longer questionnaires did not jeopardize the response rates. Few studies analysed this association using repeated questionnaires, but two of them reported that the questionnaire length had no influence on response rates of the follow-up questionnaires (McCambridge et al., 2011; Mikkelsen et al., 2009). Other randomised trials, that applied a single questionnaire, also found no association between questionnaire length and response rates (Hardigan et al., 2016; Tai et al., 2018; Yetter & Capaccioli, 2010). However, there are some studies that found a positive association between shorter questionnaires and response rates (Edwards et al., 2009; Galesic & Bosnjak, 2009; Guo, Kopec, Cibere, Li, & Goldsmith, 2016), but also a negative association (Koitsalu et al., 2018).

The mixed findings are due to the different settings of the surveys (e.g. location, target population), and to the different ways the length of the questionnaires is operationalized, for instance number of items, number of screens, or estimated time to complete (Fan & Yan, 2010). In order to standardise the findings, we encourage authors to use the total number of items in a questionnaire as the length measure. This would be the most comparable metric between different study settings, since the number of screens in a web-based survey depends on the number of items per screen, and the estimated time to complete is closely dependent on the computer literacy and socio-demographic characteristics of the sample (Fan & Yan, 2010; Mikkelsen et al., 2009).

Regarding reminders, the literature describes that the timing the reminders are sent can influence response rates (Lewis & Hess, 2017). In our study, reminders were sent at different times of the day, and on different days of the week. The only rule was to send the reminders according to the frequency to which the participants were assigned to. Considering that the timing varied between participants, we can discard any influence of this factor in our results. Some studies also describe that sending more reminders can improve response rates (Aerny-Perreten et al., 2015; Koitsalu et al., 2018; Svensson, Svensson, Hansen, & Trolle Lagerros, 2012; Toledo et al., 2015). However, Cho and colleagues found that the response rate was higher when two reminders were sent, compared to three or more reminders (Cho, Johnson, & VanGeest, 2013). This shows that it is important to consider the possible overburden of the participants. In our study, we can discard overburden, as sending reminders every 15 days was more efficient to increase response rates compared to sending reminders every 30 days. Hence, we hypothesise that sending reminders more frequently, for instance every week or 10 days, could reflect in even higher response rates (Svensson et al., 2012; Toledo et al., 2015).

One limitation that could have affected our study is that we used only three online methods to send reminders (e-mails, Facebook and Whatsapp messages). We chose these methods because they are largely used in Brazil and because they were free to use. Other types of offline methods, such as phone calls or short message services could be adopted in order to increase the response rates, but these would involve additional costs (Watson et al., 2016). A second limitation involves the definition of what is considered a short or long questionnaire. There is no well-stablished definition of questionnaire length in the literature, thus we adopted an intermediate length based on the findings of a cross-sectional study. This study identified 10-minute surveys as being the ideal length, and 20-minute surveys as the maximum acceptable length (Revilla & Ochoa, 2017). Our short questionnaires took, on average, 4 minutes to be completed (ranging from 11 to 17 items), while the long questionnaires took, on average, 14 minutes to be compiled (ranging from 21 to 33 items). The similar number of items between our two versions of questionnaires could explain the lack of difference on the response rates according to questionnaire length. However, as stated before, measuring questionnaire length through its estimated time to complete is not the ideal metric. Another limitation that could have affected our study is the lack of a formal definition of what is considered a high or a low frequency of reminders. We arbitrarily decided that sending reminders every 15 days was a high frequency, and every 30 days a low-frequency groups. Although we hypothesise that sending reminders more frequently would increase response rates, we did not have enough workforce to test this hypothesis. Reminders sent by Whatsapp and Facebook relied on a manual process, and as our research team was composed of only two persons, we were not able to send reminders in a higher frequency. Thus, we encourage future studies to test the influence of sending reminders every week, for example, in order to assess if our hypothesis is confirmed.

Our study also presents some strengths, such as the 2 × 2 factorial design that enabled the analysis of the main effects of questionnaire length and frequency of reminders, including their interaction, on the response rates. Another strength was the successful randomisation of the participants at the moment they registered into the platform, as it freed our analyses of any confounding factor that could have influenced the results. The fact that the randomisation process was blind guaranteed that the participants did not know the length of the questionnaires or the frequency of reminders they would receive. Hence, any differences in the response rates between randomisation arms can be attributed to the design of the survey, instead of any motivational aspect of each participant. Being one of the first epidemiologic studies to apply a longitudinal design with web-based questionnaires is also a strong point of our study, as it was possible to understand how the response behaviour of the participants varied over time.

Conclusions

Our study obtained high response rates in the first three questionnaires, but it reduced for the following questionnaires. Web-based studies should adopt strategies aiming to keep participants motivated (e.g. giving monetary incentives and covering different survey topics) in order to avoid the declining response rates in longitudinal web-based studies. Using long questionnaires did not jeopardize the response rates in our study, indicating that it is feasible to apply long health-related questionnaires using the Internet. The higher response rates among the group that received more frequent reminders show that the use of an even higher frequency of reminders could positively impact response rates; however, this should be empirically analysed in order to determine which frequency is ideal and do not represent a burden to the participants.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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