

# Belgian Fertility Clinic Staff Value Healthy Lifestyle Promotion but Lack Access to a Structured Lifestyle Modification Programme: An Observational Study

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## Keywords

Preconception · Lifestyle · Infertility · Practices · Fertility Clinic Staff

## Abstract

**Objectives:** Guidelines advise promoting a healthy lifestyle among patients with fertility problems as the lifestyle of women and men proved to be associated with their fertility. Australian fertility nurses were shown to lack access to structured lifestyle modification programmes, although they value healthy lifestyle promotion. This study aimed to examine whether gynaecologists also value promoting a healthy lifestyle and whether structured lifestyle modification programmes are available in Belgian fertility clinics. **Design:** An observational study was conducted among health care professionals (HCPs) working in Belgian fertility clinics. **Participants/Materials, Setting, Methods:** An Australian questionnaire on attitudes and practices related to promoting a healthy lifestyle among patients with fertility problems was reciprocally back-to-back translated and three open-ended questions were added. All HCPs of Belgian fertility clinics, including gynaecologists, fertility nurses/

midwives, psychologists, and embryologists, were invited by e-mail to complete the questionnaire online. Responses to closed and open-ended questions were analysed with, respectively, descriptive statistics and qualitative thematic analysis. Finally, differences in perspectives between different groups of HCPs were explored. **Results:** A total of 50 fertility nurses/midwives, 42 gynaecologists, and 19 other HCPs completed the survey ( $n = 111$ ). Regarding attitudes, all respondents valued informing patients about the impact of lifestyle on fertility. The vast majority of HCPs ( $n = 96$ ; 86%) stated that fertility clinics have the responsibility to address unhealthy lifestyles prior to offering fertility treatment. Fertility nurses/midwives were significantly more likely than gynaecologists to state that fertility clinics have this responsibility ( $p = 0.040$ ). Regarding practices, the patient's lifestyle was most commonly discussed by the gynaecologist ( $n = 107$ ; 96%) during the first appointment ( $n = 105$ ; 95%). The lifestyle factors that were being addressed, according to the vast majority of respondents, were smoking, weight, age, alcohol, and recreational drugs. Only three HCPs (from three different clinics) stated that their clinic offered a structured lifestyle modification programme. HCPs explained that they lacked the resources and expertise for offering a structured

lifestyle modification programme. **Limitations:** Response rates were limited, but the responding Belgian gynaecologists and fertility nurses/midwives confirmed the findings of the previous study in Australian fertility nurses. **Conclusions:** HCPs working in Belgian fertility clinics value healthy lifestyle promotion but lack access to structured lifestyle modification programmes to implement in their daily clinical practice. Future studies should focus on developing and evaluating structured lifestyle modification programmes for patients with fertility problems.

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## Introduction

Increasing evidence from observational and interventional studies suggests that modifiable lifestyle factors such as weight, diet, physical activity, stress, alcohol intake, caffeine intake, smoking, and other substance abuse impact the fertility of women, men, and the health of their children [1–8]. Promoting a healthy lifestyle in women and men confronted with fertility problems can stimulate lifestyle modifications and can thereby increase their chances of timely conception and delivery of a healthy baby [3, 9, 10]. A guideline of the European Society of Human Reproduction and Embryology (ESHRE) recommends fertility clinic staff provide patients with information on lifestyle behaviours that may negatively affect their reproductive health and to support patients in changing their lifestyle behaviour [11]. Similarly, the World Health Organization (WHO) recommends promoting a healthy lifestyle before conception to reduce behavioural risks [12, 13]. Whether these recommendations have been implemented in daily clinical practice is not clear. Moreover, these recommendations do not specify the content and mode of delivery of the required lifestyle promotion programmes for women and men with fertility problems. A survey among Australian nurses working in fertility clinics showed that all nurses valued lifestyle promotion but that most Australian clinics did not provide internal resources for nurses to assist patients with this lifestyle modification [14]. Whether gynaecologists and other health care professionals (HCPs) working in fertility clinics also value lifestyle promotion and how healthy lifestyle promotion is addressed in the clinics from other countries has yet to be explored. This study aimed to identify the attitudes and practices of HCPs working in Belgian fertility clinics regarding the promotion of a healthy lifestyle among their patients with fertility problems.

## Materials and Methods

### Study Design and Setting

A cross-sectional observational study was conducted among the staff of Belgian fertility clinics between June and November 2020. The “Strengthening the Reporting of Observational Studies in Epidemiology” (STROBE) guidelines were followed [15] (online suppl. material I; for all online suppl. material, see <https://doi.org/10.1159/000531139>). More specifically, an online survey addressing the attitudes and practices on healthy lifestyle promotion in patients with fertility problems was disseminated among all HCPs working in Belgian fertility clinics.

### Study Population

Inclusion criteria were being a HCP who interacts with patients and works in a registered Belgian fertility clinic, including: gynaecologists, fertility nurses/midwives/nurses (i.e., both have similar responsibilities), psychologists, or embryologists. No further inclusion or exclusion criteria were applied. Based on information from Belgian fertility clinics and the Belgian Registry for Assisted Procreation (BELRAP), Belgian fertility clinics are estimated to employ 548 HCPs. Two strategies were combined to reach these HCPs. First, three Belgian associations of HCPs invited all their members to respond to the online survey, including: the “Belgian Society of Reproductive Medicine” (BSRM), “Vlaamse Vereniging voor Obstetrie en Gynaecologie” (VVOG), and “Groupement des Gynécologues Obstétriciens de langue Française de Belgique” (GGOLFB); second, all 33 registered Belgian fertility clinics were requested by phone and subsequently by e-mail to disseminate the online survey among all HCPs interacting with patients in their fertility clinics.

### Questionnaire

An online survey comprising 30 items regarding the attitudes and practices on healthy lifestyle promotion of HCPs of fertility clinics was administered via the web-based survey tool Qualtrics® (Qualtrics, Provo, UT, USA) [16]. This questionnaire had been developed by Homan et al. [14] to map the attitudes and practices of Australian fertility nurses regarding lifestyle modification in patients seeking fertility treatment. This Australian questionnaire was back-to-back translated in Dutch and French, and eight new questions were added. More specifically, five questions gathered additional sociodemographic information from HCPs (questions 1–3, 5, and 6), and three open-ended questions were added based on the findings and limitations (lack of detail about preconception counselling) of the study by Homan et al. [14]. The open-ended questions explored (i) how a healthy lifestyle was promoted (Question 17), (ii) whether clinic staff collaborated with other HCPs for promoting a healthy lifestyle (Question 18), and whether participants had anything else to add on to lifestyle counselling and fertility. The final questionnaire consisted of questions on (i) sociodemographic background of the responding HCPs (questions 1–6), (ii) attitudes (questions 7–12, 14), and (iii) practices (questions 13, 15–18) regarding the promotion of a healthy lifestyle, (iv) the use of structured lifestyle support programmes (questions 19–26), and (v) attitudes and policies on conditions for initiating fertility treatment related to Body Mass Index (BMI) (questions 27–29). Most questions had fixed response options (i.e., closed questions), but some open-ended questions were included to obtain more detailed information. The Dutch back-to-back translation of the questionnaire is available in online supplementary material II.

**Table 1.** The sociodemographic and professional characteristics of the respondents ( $n = 111$ )

	Frequency, $n$	%
<i>Gender</i>		
Male	8	7
Female	103	93
<hr/>		
	Median	IQR
Age, years	40	32–50
<hr/>		
	$n$	%
<i>Function</i>		
Fertility nurses/midwives	50	45
Gynaecologists	42	38
Embryologists	13	12
Psychologists	4	4
Scientists	2	2
<hr/>		
	Median	IQR
How long active in this function, years	10	4–17
<hr/>		
	$n$	%
<i>Fertility clinic</i>		
Non-university fertility clinic	48	43
University fertility clinic	63	57
<hr/>		
IQR, interquartile range.		

#### Statistical Analyses

Data were extracted from Qualtrics® (Qualtrics, Provo, UT, USA) [16] and stored on the protected server of KU Leuven. Statistical analyses were performed in SPSS (SPSS Inc., Chicago, USA) [17]. The responses to the closed questions were described with proportions and percentages. Comparative analyses explored differences in attitudes towards promoting a healthy lifestyle between gynaecologists and fertility nurses/midwives and differences in practices between university and non-university fertility clinics. Exploratory comparative analyses were performed using Mann-Whitney U tests for ordinal data and  $\chi^2$  tests or Fisher's exact tests (when having less than five observations for a subgroup for categorical data). The responses to the open-ended questions were subjected to "qualitative thematic analysis" [18] by two researchers working independently at first and reaching consensus through discussion afterwards to ensure methodological trustworthiness. The data were thoroughly read and coded. Subsequently, themes were derived from these codes.

## Results

### Respondents

Besides the three professional associations, 31 of the 33 contacted fertility clinics sent out the survey. In total, 111 HCPs responded to the survey. This means

that we reached 20% of the estimated 548 HCPs working in Belgian fertility clinics. The respondents included HCPs of 27 of the 33 (82%) registered Belgian fertility clinics. On average, three HCPs responded per fertility clinic (range 1–17). The sociodemographic and professional characteristics of the respondents are described in Table 1. The vast majority of the respondents, on average 40 years of age, were female, and almost half of the participants ( $n = 50$ ; 45%) were fertility nurses/midwives. More than half ( $n = 63$ ; 57%) of the participants worked in university fertility clinics.

### Attitudes of Belgian Fertility Clinic Staff Regarding Promoting a Healthy Lifestyle

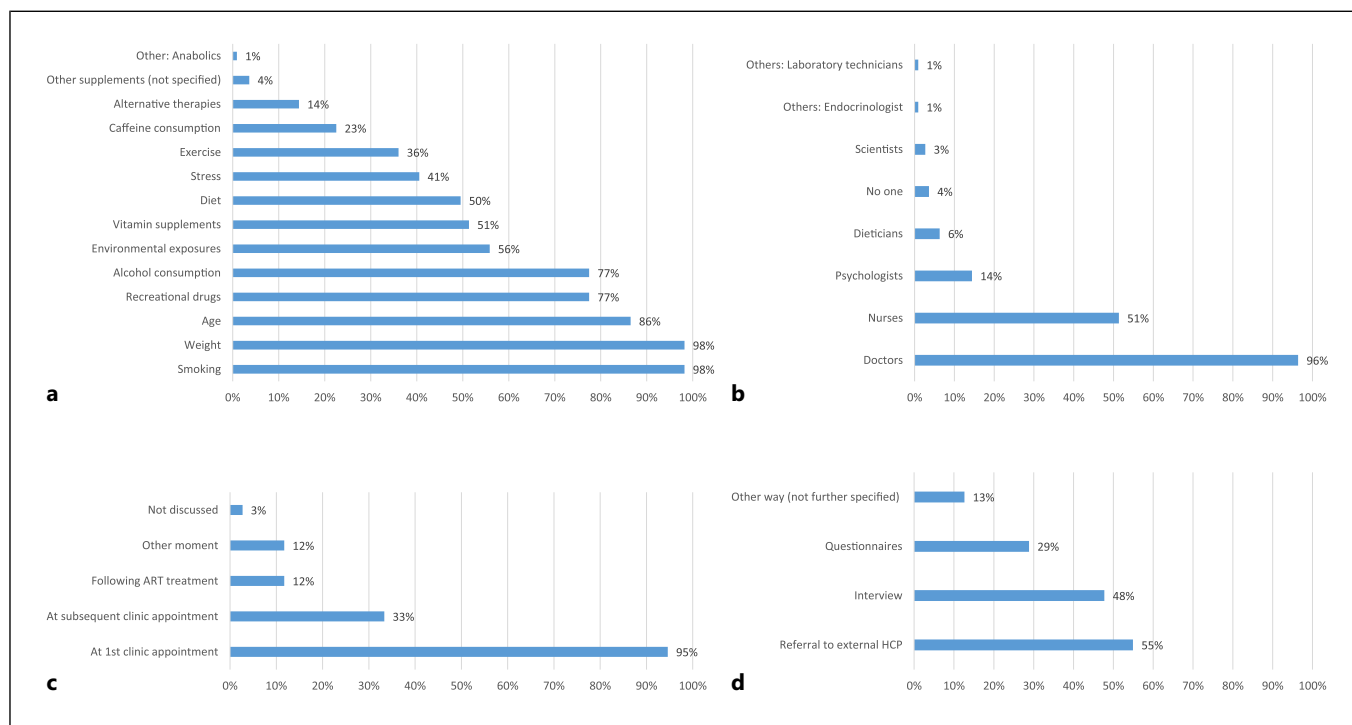
All respondents indicated that informing patients about the impact of lifestyle on fertility is (very) important. The vast majority of respondents ( $n = 100$ ; 90%) valued offering practical resources for adopting a healthy lifestyle (e.g., exercise plans, dietary advice). The majority of respondents ( $n = 72$ ; 65%) attached importance to support from HCPs for lifestyle modification (e.g., phone calls, e-mails from HCPs). The vast majority of respondents ( $n = 96$ ; 86%) stated that fertility clinics have the responsibility to address unhealthy lifestyles before offering fertility treatment. Nurses/midwives were significantly more likely than gynaecologists to state that fertility clinics have this responsibility (47/50 vs. 34/42;  $p = 0.040$ ). The most common reason provided in response to an open question for considering lifestyle promotion a responsibility of fertility clinics was the influence of lifestyle on fertility and treatment success (Table 2). The most common reason for not considering it a responsibility of fertility clinics was considering it the responsibility of HCPs outside the fertility clinic (Table 2). The vast majority of respondents thought gynaecologists ( $n = 104$ ; 94%) and/or fertility nurses/midwives ( $n = 98$ ; 88%) had a role in informing patients about the impact of lifestyle on fertility. Only a small minority of respondents ( $n = 8$ ; 7%) thought other HCPs, such as dieticians, should provide this information.

### Practices of Belgian Fertility Clinic Staff on Healthy Lifestyle Promotion

Figure 1 presents an overview of which lifestyle factors are discussed in fertility clinics according to the respondents and by whom, when, and how. Almost all respondents indicated that smoking ( $n = 109$ ; 98%) and weight ( $n = 109$ ; 98%) were routinely discussed in their

**Table 2.** Overview of the provided reasons for (not) considering the promotion of healthy lifestyle the responsibility of fertility clinics (results from open question)

	Frequency, <i>n</i>
Reasons for considering healthy lifestyle promotion the responsibility of fertility clinics among 96 (86%) HCPs	
Influence on fertility and treatment success	45
Keeping health care cost of society as low as possible	13
Pregnancy complication reduction	8
Patient education/empowerment	7
Consequences for offspring's health	5
Reasons for not considering healthy lifestyle promotion the responsibility of fertility clinics among 14 (13%) HCPs	
Responsibility of other HCPs	9
Patients' responsibility	4



**Fig. 1.** Which lifestyle factors are discussed, by whom, when, and how? **a** What lifestyle factors are routinely discussed with patients in your fertility clinic? **b** In your fertility clinic who actually discusses and advises patients about lifestyle modification? **c** When is lifestyle discussed with patients in your fertility clinic? **d** How is lifestyle discussed with patients in your fertility clinic? HCP, health care professional; ART, assisted reproductive technologies.

fertility clinics. Other lifestyle factors discussed according to the vast majority of respondents ( $\geq 77\%$ ) are age, recreational drugs, and alcohol consumption. The vast majority of respondents ( $n = 107$ ;  $96\%$ ) answered that gynaecologists discussed lifestyle factors with patients, most often during the first appointment ( $n = 105$ ;  $95\%$ ). Only a minority of respondents ( $33\%$ ) indicated that

lifestyle was discussed during every single appointment at the clinic. The majority of the respondents ( $n = 61$ ;  $55\%$ ) reported that their fertility clinic refers patients to external HCPs for healthy lifestyle promotion. Respondents clarified in response to an open-ended question that these external HCPs included dieticians ( $n = 41$ ), smoking cessation counsellors ( $n = 23$ ), psychologists ( $n = 15$ ),

endocrinologists ( $n = 14$ ), the obesity clinic ( $n = 7$ ), physiotherapists ( $n = 5$ ), general practitioners ( $n = 3$ ), addiction counsellors ( $n = 1$ ), lifestyle coaches ( $n = 1$ ), or sports coaches ( $n = 1$ ). Exploratory comparative analyses did not reveal differences in practices on healthy lifestyle promotion between respondents from university and from non-university clinics. The vast majority of respondents ( $n = 108$ ; 97%) shared that their fertility clinic does not offer a structured lifestyle modification programme. Respondents provided the following clarifications in response to an open-ended question: no availability of such programme ( $n = 21$ ), programme only available in the context of a study ( $n = 2$ ), referral to other HCPs for gaining access to such programme ( $n = 15$ ), lack of financial resources ( $n = 12$ ), staff ( $n = 9$ ), time ( $n = 9$ ; 8%), guidelines/expertise ( $n = 4$ ). Only three respondents from three different clinics reported that their fertility clinics offered a structured lifestyle modification programme, but this was contradicted by HCPs from the same clinics. Two of these three respondents clarified in responses to an open-ended question that their clinic offered a weight-loss programme for patients who were overweight coordinated by an endocrinologist, which is part of a study ( $n = 1$ ), and a programme targeting diet, exercise, and other lifestyle factors coordinated by the physiotherapy department ( $n = 1$ ).

#### *Attitudes and Practices regarding BMI Requirements for Starting Fertility Treatment*

The vast majority of respondents ( $n = 85$ ; 77%) valued restricting access to fertility treatment based on BMI. Maximal BMI levels for gaining access provided in response to an open-ended question ranged between 25 kg/m<sup>2</sup> and 40 kg/m<sup>2</sup>, with a median of 35 kg/m<sup>2</sup>.

The majority of respondents ( $n = 44/70$ ; 63%) shared that their clinic restricted access to treatment based on BMI. Some of these respondents clarified in response to an open-ended question that these restrictions were based on an internal policy ( $n = 16$ ) or guidelines from a professional association ( $n = 10$ ). Five respondents clarified that their fertility clinics adopted different maximal BMI levels depending on the type of treatment (IVF or non-IVF treatment or surgery) and/or age.

#### *Additional Information Reported on Lifestyle and Fertility*

Nineteen responses were provided on the last open-ended question "Is there anything else you would like to add about lifestyle and fertility"? Eight respondents highlighted the importance of a healthy lifestyle for general health besides fertility, which requires HCPs other than those of fertility clinics to promote a healthy

lifestyle. Some respondents ( $n = 4$ ) prioritized lifestyle factors (e.g., obesity). Seven respondents called for more training on promoting a healthy lifestyle.

## **Discussion**

This study showed that Belgian fertility clinic staff value healthy lifestyle promotion among their patients. Optimising preconception health can improve maternal, paternal, and children's health and reduce the growing burden of non-communicable diseases [1, 19]. However, addressing this issue in the general population of reproductive age trying to conceive remains a challenge [20]. People with fertility problems are a unique population to promote a healthy lifestyle since they visit the fertility clinic before conception [21]. However, the results of our study suggest that this opportunity is not being fully used. Our results agree with the Australian research on attitudes and practices of senior fertility nurses in Australian fertility clinics [14]. A similarly high number of participants found that fertility clinics are responsible for addressing unhealthy lifestyles (98% in Australia vs. 86% in Belgium). In Australia, weight was rated as the most important lifestyle factor to address in people with infertility, reflecting the high prevalence of adults with overweight and/or obesity in Australia [14]. Still, only 1 in 4 Australian clinics offer structured lifestyle modification programmes [14]. In Belgium, overweight and obesity rates are lower than in Australia, although numbers are increasing, especially in adolescents [22]. Unfortunately, our study shows almost absence of structured lifestyle modification programmes for people with fertility problems (25% in Australia vs. 2.7% in Belgium). The main barriers were alike in both the Australian survey and our survey: insufficient resources including the lack of trained personnel and time. In our study, this is reflected by the considerable proportion of participants shifting responsibility to other HCPs and referral of patients to the periphery for healthy lifestyle promotion. Although international organisations such as the European Society of Human Reproduction and Embryology (ESHRE), World Health Organization (WHO), the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG), and the American Society for Reproductive Medicine (ASRM) are uniform in their advice to improve lifestyle before conception, a recent Cochrane systematic review on lifestyle interventions in people with fertility problems failed to identify a significant effect of lifestyle advice on the number of live births [3]. However, the available evidence was of low-to-very

low quality due to a large heterogeneity of study interventions and outcomes. Thus, future research by well-designed studies is needed to investigate the effectiveness and safety of preconception lifestyle advice in patients with fertility problems [3]. The mode of delivery of an efficient lifestyle modification programme also remains a focus for future research. Mobile applications could be a promising format for promoting a healthy lifestyle in people with fertility problems. These recent techniques may counter barriers such as lack of time and personnel and have been proven effective in empowering patients [23]. An example is the Dutch “Smarter Pregnancy Programme.” Tailored coaching on vegetable, fruit, and folic acid supplement intake, smoking, and alcohol consumption is delivered through text messages or e-mail [24]. In Australia, the “Your Fertility Programme” tries to improve awareness about modifiable lifestyle factors that affect fertility and reproductive outcomes via social media [25]. Also, in Belgium, there is an ongoing study on a mobile application focussing on diet, physical activity, and mindfulness combined with interaction with an HCP for patients with fertility problems [26, 27]. However, this programme has not been implemented in clinical practice.

Another finding in our study was the recognition that the majority of respondents limit access to fertility treatment based on weight and/or BMI. Recently, the ASRM updated their committee opinion on obesity and reproduction [7]. They indicated that individual programmes should be empowered to adopt programme-specific BMI thresholds and that patients should be encouraged to attain a BMI within the normal range (18.5–25 kg/m<sup>2</sup>) [7]. It should be acknowledged that achieving weight loss in women who are overweight and/or obese remains challenging. Moreover, three recent, well-designed randomised controlled trials in women with obesity eligible for assisted reproductive technologies (ART) failed to show an increase in live births after weight-loss intervention [28–30]. In addition, HCPs face ethical issues when patients eligible for ART, e.g., because of tubal or male infertility, do not achieve the targeted weight loss. Although there is ample evidence of the positive effects of weight loss on the general health of the future mother and her future child [1, 7, 10, 31, 32], future studies may consider shifting focus towards metabolic health instead of solely on patients’ weight [33].

#### *Strengths and Limitations of the Study*

A limitation of the study was the low response rate ( $n = 111/548$ ; 20%). Self-selection bias based on an interest in healthy lifestyle promotion is likely.

Suppose we were to assume that the non-responsive HCPs are not interested in healthy lifestyle promotion. In that case, our results may overestimate HCPs’ interest in promoting a healthy lifestyle among their patients. Although we performed exploratory comparative analyses to explore differences in attitudes and practices between different professions of the HCPs and between types of fertility clinics, our numbers of respondents were too low to draw firm conclusions. Ideally, an equal percentage of respondents from all clinics in different countries should be included to obtain more reliable data. The strength of this study was that, to the best of our knowledge, this was the first study that mapped the current attitudes and practices of Belgian fertility clinic staff on healthy lifestyle promotion among their patients with fertility problems by collecting both quantitative and qualitative data.

#### **Conclusions**

Belgian fertility clinic staff value healthy lifestyle promotion among their patients with fertility problems. Lack of accessible structured lifestyle modification programmes, resources, and expertise on healthy lifestyle promotion are the main reasons for not integrating this routinely in daily clinical practice. Our findings indicate the need for multidisciplinary collaboration to develop and offer lifestyle modification programmes to patients with fertility problems. We propose an alliance of HCPs to gain attention and resources for healthy lifestyle promotion in couples with fertility problems and the general population trying to conceive.

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#### **Statement of Ethics**

This study was approved by the Ethics Committee of University Hospitals Leuven and KU Leuven and conducted ethically in accordance with the World Medical Association Declaration of Helsinki (Approval No. MP014071). Informed consent to participate was not directly obtained but inferred by completion of the questionnaire. Informed consent information



was added at the beginning of the questionnaire, and participants had to provide an online signature before starting the questionnaire.

### Conflict of Interest Statement

The authors have no conflict of interest to declare.

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### Author Contributions

All authors (T.B., E.D., N.S., C.S., C.M., and S.L.F.) contributed to the design of the study. T.B., N.S., and S.L.F. made an essential effort in the acquisition of the patient data. T.B. and N.S. analysed and all authors interpreted the data. T.B. prepared this manuscript, and all authors read, revised, and approved the final manuscript.

### Data Availability Statement

The International Committee of Medical Journal Editors' recommendations will be followed regarding data sharing. Individual deidentified participant data will be made available upon reasonable request. Further enquiries can be directed to the corresponding author.

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