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Sexual Health

Supplementary Material

Exploring midwives' training needs and preferences for providing sexual health education for pregnant women: a mixed-methods study

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Supplementary Table S1 Reporting guidelines

We followed the reporting guidelines of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE), the Consolidated Criteria for Reporting Qualitative Research (COREQ), and the Good Reporting of a Mixed Methods Study (GRAMMS) for the anonymous cross-sectional online survey (a), the one-on-one semi-structured in-depth interviews (b), and the explanatory sequential mixed-methods study (c), which are reported below. "Page No." may be incorrect as it was based on the submitted manuscript.

(a) Strengthening the Reporting of Observational Studies in Epidemiology (STROBE)

Topic	Item No.	Item description	Reported on page No. and extra information
Title and abstract			
Title and abstract	1a	Indicate the study's design with a commonly used term in the title or the abstract	Title and the abstract P2 line 38
	1b	Provide in the abstract an informative and balanced summary of what was done and what was found	P3, line 54-56
Introduction			
Background/Rationale	2	Explain the scientific background and rationale for the investigation being reported	P3 line 63-66,P4, P5 line 89-99
Objectives	3	State specific objectives, including any prespecified hypotheses	P5, line 99-103
Methods			
Study design	4	Present key elements of study design early in the paper	P5, line106-109
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	P6, line 115-117
Participants	6a	Cohort study—Give the eligibility criteria, and the sources and methods of selection of participants. Describe methods of follow-up Case-control study—Give the eligibility criteria, and the sources and methods of case ascertainment and control selection. Give the rationale for the choice of cases and controls Cross-sectional study—Give the eligibility criteria, and the sources and methods of selection of participants	P6, line 117-126
	6b	Cohort study—For matched studies, give matching criteria and number of exposed and unexposed Case-control study—For matched studies, give matching criteria and the number of controls per case	N/A
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	N/A
Data Sources/Measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	P7, line 142-146
Bias	9	Describe any efforts to address potential sources of bias	N/A
Study size	10	Explain how the study size was arrived at	P6, line 115-116. All midwives from 19 hospitals in Guangdong Province, China participated in the quantitative study.
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	P8, line 169-171
Statistical methods	12a	Describe all statistical methods, including those used to control for confounding	P8, line 169-171; P9, line 172-185
	12b	Describe any methods used to examine subgroups and interactions	N/A
	12c	Explain how missing data were addressed	N/A
	12d	Cohort study—If applicable, explain how loss to follow-up was addressed Case-control study—If applicable, explain how matching of cases and controls was addressed Cross-sectional study—If applicable, describe analytical methods taking account of sampling strategy	N/A
	12e	Describe any sensitivity analyses	N/A
Results			
Participants	13a*	Report numbers of individuals at each stage of study—eg, numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	P12, line236-239
	13b*	Give reasons for non-participation at each stage	N/A
	13c*	Consider use of a flow diagram	A flow diagram was not presented.

Descriptive data	14a*	Give characteristics of study participants (eg, demographic, clinical, social) and information on exposures and potential confounders	Table 1, P12, line239-243
	14b*	Indicate number of participants with missing data for each variable of interest	N/A
	14c*	Cohort study—Summarise follow-up time (eg, average and total amount)	N/A
Outcome data	15*	Cohort study—Report numbers of outcome events or summary measures over time Case-control study—Report numbers in each exposure category, or summary measures of exposure Cross-sectional study—Report numbers of outcome events or summary measures	N/A
Main results	16a	Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	N/A
	16b	Report category boundaries when continuous variables were categorised	N/A
	16c	If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg, analyses of subgroups and interactions, and sensitivity analyses	N/A
Discussion			
Key results	18	Summarise key results with reference to study objectives	P16, line 319-329
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	P19, line 394-403
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	P16, line 330-339; P17; P18; P19, line 384-389
Generalisability	21	Discuss the generalisability (external validity) of the study results	P20, line 406-410
Other Information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	P21, line 437-440

*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Reference: von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., Vandenbroucke, J. P., & STROBE Initiative (2007). The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement: guidelines for reporting observational studies. *Lancet, 370*(9596), 1453–1457. https://doi.org/10.1016/S0140-6736(07)61602-X

(b) Consolidated Criteria for Reporting Qualitative Research (COREQ)

Topic	Item No.	Item description	Reported on page No. and extra information
Domain 1: Research team and reflexivity			
Personal characteristics			
Interviewer/facilitator	1	Which author/s conducted the interview or focus group?	P8, line 153-155
Credentials	2	What were the researcher's credentials? eg, PhD, MD	P11, line 215-220
Occupation	3	What was their occupation at the time of the study?	Nurse
Gender	4	Was the researcher male or female?	Female, P11, line 220
Experience and training	5	What experience or training did the researcher have?	P11, line 220-222
Relationship with participants			
Relationship established	6	Was a relationship established prior to study commencement?	The interviewer established a friendly relationship with the participants before interviews. P10, line 196-197
Participant knowledge of the interviewer	7	What did the participants know about the researcher? eg, personal goals, reasons for doing the research	The interviewer was not known to the participants before this study. Information about the study and the interviewer was provided before interviews.
Interviewer characteristics	8	What characteristics were reported about the interviewer/facilitator? eg, bias, assumptions, reasons and interests in the research topic	P11, line 222-225
Domain 2: Study design			
Theoretical framework			
Methodological orientation and Theory	9	What methodological orientation was stated to underpin the study? eg, grounded theory, discourse analysis, ethnography, phenomenology, content analysis	P9, line 174-185
Participant selection			
Sampling	10	How were participants selected? eg, purposive, convenience, consecutive, snowball	P6, line 122-126
Method of approach	11	How were participants approached? eg, face-to-face, telephone, mail, email	P6, line 115-117
Sample size	12	How many participants were in the study?	P12, line 235-238
Non-participation	13	How many people refused to participate or dropped out? Reasons?	No participants refused to participate or dropped out.
Setting			
Setting of data collection	14	Where was the data collected? eg, home, clinic, workplace	P8, line 153
Presence of nonparticipants	15	Was anyone else present besides the participants and researchers?	P8, line 154-155
Description of sample	16	What are the important characteristics of the sample? eg, demographic data, date	Table 2
Data collection			
Interview guide	17	Were questions, prompts, guides provided by the authors? Was it pilot tested?	P7, line 149-151
Repeat interviews	18	Were repeat interviews carried out? If yes, how many?	No repeat interviews were conducted.
Audio/visual recording	19	Did the research use audio or visual recording to collect the data?	P8, line 155-156
Field notes	20	Were field notes made during and/or after the interview or focus group?	P8, line 155. Notes were taken during the interviews.
Duration	21	What was the duration of the interviews or focus group?	P8, line 156-157
Data saturation	22	Was data saturation discussed?	P12, line 236-237
Transcripts returned	23	Were transcripts returned to participants for comment and/or correction?	No
Domain 3: analysis and findings			
Data analysis			
Number of data coders	24	How many data coders coded the data?	P10, line 198-200
Description of the coding tree	25	Did authors provide a description of the coding tree?	P9, line 177-185
Derivation of themes	26	Were themes identified in advance or derived from the data?	Derived from the data
Software	27	What software, if applicable, was used to manage the data?	P9, line 172-173
Participant checking	28	Did participants provide feedback on the findings?	No
Reporting			
Quotations presented	29	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? eg, participant number	Yes, P12-P15

Data and findings consistent	30	Was there consistency between the data presented and the findings?	Yes, P12-P15
Clarity of major themes	31	Were major themes clearly presented in the findings?	Yes, P12-P15
Clarity of minor themes	32	Is there a description of diverse cases or discussion of minor themes?	Yes, P12-P15

Reference: Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, *19*(6), 349–357. https://doi.org/10.1093/intqhc/mzm042

(c) Good Reporting of a Mixed Methods Study (GRAMMS)

Topic	Item No.	Item description	Reported on page No. and extra information
Domain 1: Describe the justification for using a mixed methods approach to the research question			
	1	Justification for using a mixed methods approach	P5, line 100-103
Domain 2: Describe the design in terms of the purpose, priority and sequence of methods			
	2	Purpose	P5, line 100-103
		Priority	The quantitative strand and qualitative strand had equal emphasis. Both strands had equally important role in addressing the research question.
		Sequence	P7
Domain 3: Describe each method in terms of sampling, data collection and analysis			
Quantitative design	3	Sampling	P6, line 115-116. All midwives from 19 hospitals in Guangdong Province, China participated in the quantitative study.
		Data collection	P7, line 142-146
		Analysis	P8, line 169-171
Qualitative design		Sampling	P6, line 122-126. The qualitative study was conducted based on the principle of data saturation.
		Data collection	P7, line 148-152; P8, line 153-157
		Analysis	P9, line 172-185
Domain 4: Describe where integration has occurred, how it has occurred and who has participated in it			
	4	Where integration has occurred	P6, line 115-117; P8, line 153
		How integration has occurred	P6-P7; P8, line 153-157
		Who has participated in integration	P8, line 169
Domain 5: Describe any limitation of one method associated with the present of the other method			
	5	Limitation of one method associated with the present of the other method	P19, line 391-403
Domain 6: Describe any insights gained from mixing or integrating methods			
	6	Insights gained from mixing or integrating methods	P16-P19; P20, line 406-410

Reference: O'Cathain, A., Murphy, E., & Nicholl, J. (2008). The quality of mixed methods studies in health services research. *Journal of Health Services Research & Policy, 13*(2), 92–98. https://doi.org/10.1258/jhsrp.2007.007074

Supplementary Table S2 The training needs and preferences of midwives in providing sexual health education

1. If there were training programs on sexual education during pregnancy, would you be willing to participate?

A. Very willing

B. Willing

C. Uncertain

D. Unwilling

E. Very unwilling

2. If there were training programs on sexual education during pregnancy, please rate the following topics based on your perceived need.

Theme Content	Very Unnecessary	Not Very Necessary	Neutral	Somewhat Necessary	Very Necessary
An introduction to sexual health and sex education	1	2	3	4	5
Basic knowledge of sexual medicine (sexual physiology, sexual psychology, sexual behaviour, and sexual development)	1	2	3	4	5
Comprehensive sexual health counselling and communication skills	1	2	3	4	5
Methods for implementing sexual health education together with assessment of effect	1	2	3	4	5
Female whole-life sexual health care	1	2	3	4	5
Birth control and birth planning – related care issues	1	2	3	4	5
Healthy birth and healthy birth care and infertility-related nursing problems	1	2	3	4	5
Issues related to reproductive tract infections and sexually transmitted diseases	1	2	3	4	5
Sexual psychological disorders, sexual dysfunction and sex-related care problems	1	2	3	4	5

Issues related to the sexual sociology (sexual culture, sexual morality, sexual attitude, and sexual values)	1	2	3	4	5

3. Are there any additional topics related to sexual education during pregnancy that you would like to see included? If so, please provide specific details.

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4. What type of sexual education training format do you prefer? (Multiple choice)

A. Attend offline workshops, training sessions, or seminars

B. Engage in online education

C. Participate in domestic and international academic conferences and specialized lectures

D. Self-study

E. Other (please specify) _____

Supplementary Table S3. Topics addressed in the interviewer guide

Topic	Guiding Questions
Unveiling Professional Development Desires: Exploring the Gaps in Training Needs	I'd like to start by asking if you can provide sexual health information for pregnant women. ● Have you received sexual health education? If yes, how did you acquire it? ● Do you think you need to receive more sexual health education?
Preferential Pathways: Exploring Distinctive Choices in Training.	Can you tell me what kind of training you think is most suitable for you? ● Why do you think so? Could you provide reasons for your opinion? ● Which training method listed in the questionnaire do you think should be emphasized more? Why? ● What do you think needs to be trained about sexual health? ● Were there any other topics you wished to discuss that were not covered in our questionnaire?
Reflection	Is there any other information that you wish to share with me? Is there anything that you wish you had known?