

BMJ Open Religion and cancer prevention: study protocol for a systematic review

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To cite: Kretzler B, König H-H, Brandt L, *et al.* Religion and cancer prevention: study protocol for a systematic review. *BMJ Open* 2021;**11**:e046126. doi:10.1136/bmjopen-2020-046126

► Prepublication history for this paper is available online. To view these files, please visit the journal online (<http://dx.doi.org/10.1136/bmjopen-2020-046126>).

Received 20 October 2020
Accepted 13 December 2021

ABSTRACT

Introduction Several studies explored a relationship between religiousness and the utilisation of cancer screenings, as religious people may obtain an increased social network or could have certain personality traits that enhance screening use. To the best of our knowledge, there is no systematic review that sums up the evidence gained from research on that relationship. Thus, our review aims to appraise the findings of observational studies regarding that relationship. Its findings may be useful in addressing specific target groups to increase ineffectively the low cancer screening rates.

Methods and analysis Employing a predefined search algorithm, three online databases (CINAHL, PsycInfo and PubMed) will be searched. In addition, the bibliographies of the studies included in our review will be searched through manually and independently by two reviewers. We are looking for observational studies (both cross-sectional and longitudinal) which examine the association between religion and cancer screening utilisation. However, studies regarding specific samples (as ethnic minorities or religious sects) will be excluded. We expect that the studies examine various dimensions of religion, such as religious attendance or religious intensity. We will extract data that describe methodology, sample characteristics and the findings concerning our object of investigation. Moreover, a quality assessment will be performed. Two reviewers will independently select the studies, extract the data and assess the studies' quality. Disagreements will be dissolved by discussion or by inclusion of a third party. The findings will be presented narratively in text and tables. If possible, a meta-analysis will be carried out.

Ethics and dissemination As no primary data are collected, the approval from an ethics committee is not required. Our review will be published in a peer-reviewed, scientific journal.

PROSPERO registration number CRD42021229222.

INTRODUCTION

Cancer is one of the most important health issues worldwide. In 2018, there were 9.6 million deaths due to this disease. In addition, prevalence increased during the last years.¹ That process is expected to continue, as demographic ageing is correlated with several types of cancers.² Though, it is worth mentioning that survival rates increase as well.³ Preventive healthcare is critical to increase those rates. It is commonly divided into three groups: Primary preventive

Strengths and limitations of this study

- This is the first systematic review exploring the association between religiousness and participation in cancer screenings.
- To fulfil high-quality standards, all steps are carried out independently by two reviewers.
- The heterogeneity between the studies included in our review could prohibit the conduction of a meta-analysis.
- Our review only includes studies written in German or English language.

interventions aim to reduce the prevalence of an illness, secondary prevention aims to enable an early detection and tertiary prevention tries to prohibit a worsening after a disease's detection. Regarding cancer screenings, secondary preventive strategies include procedures such as cervical screening, breast examination or colonoscopy.

These examinations are supported by national health systems to reduce disease burden. For instance, German public health insurances cover the costs for all screenings whose efficacy has been demonstrated. Though such efforts have been made, the utilisation of preventive cancer screenings is not appropriate.⁴

To resolve that underuse, research has revealed several determinants predicting the utilisation of secondary cancer prevention. They can be categorised into predisposing (such as age and sex), enabling (such as income and education) and need variables (such as health status), according to the Andersen behavioural model of health service utilisation.⁵ Regarding predisposing and enabling factors, higher age,⁶⁻⁸ female gender⁴ and better education⁹ were found to increase the likelihood of participation in cancer screenings. Yet, among certain types of screenings, some studies revealed opposing results for age and gender.^{10 11} In addition, several need factors influence the likelihood of taking cancer screenings. A bad health status,¹⁰ the presence of health conditions⁶



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and the occurrence of cancer in one's family¹² were positively related to screening participation.

However, social factors can also influence preventive healthcare utilisation. Prior research has shown that there is a positive association between religiousness and the utilisation of preventive cancer screenings.^{6 13–21} Hereby, religion is usually operationalised as religious denomination, religiousness and religious attendance. This somewhat matches the classification of religion established by Glock,²² with religious denomination representing the 'belief' dimension, religiosity the 'feeling' aspect and religious attendance the 'practice' dimension. There are various pathways which could explain that relationship. First, religion could increase one's sensitivity towards one's own body, as a positive association between spirituality and healthy behaviours has been revealed by previous studies.^{23 24} Second, a religious community could provide social support, which helps their members to take care of themselves. Such a church-based support is also positively related to a healthy lifestyle.²⁵ Third, people who regularly participate in religious activities could have certain traits that promote the uptake of preventive screenings. For example, religious attendance is positively related with conscientiousness²⁶ which is in turn positively related to participation in cancer screenings.²⁷ On the other hand, some studies do not reveal a significant association for outstandingly religious people,²¹ who tend to have some fatalistic beliefs about health issues and, therefore, do not perceive a high impact of traditional medical procedures.²⁸ All in all, it seems that religion could be both beneficial and inhibitive to healthcare use, so that investigations concerning this matter need to consider other factors, such as its intensity, as well: a higher importance of religion in one's life is related to factors which were shown to increase the use of health services, such as social support, the sensitivity towards one's own body and healthy behaviours but could also lead to a decreasing belief in the usefulness of traditional medicine. To clarify the relevance of these pathways, it could be helpful to synthesise the evidence from studies which examine the role of religion and specifically its intensity on the use of cancer screening. Moreover, the importance and even the direction of the pathways introduced above could also considerably vary between countries. For example, religion may play a bigger role in American healthcare than in its European counterpart,²⁹ which would strengthen its role in healthcare utilisation and nearby interventions. Finally, cancer care may also be specifically related to religion, as previous studies particularly stress the spiritual dimension of cancer care,³⁰ which, on the other hand, is also meaningful to care in general.³¹ All in all, it seems reasonable to assume that cancer screenings are related to religion as well, but direction and intensity of this relationship are not self-evident.

Therefore, there are also some reviews on the association between religion and cancer screenings: on the one hand, religion was identified as a potential barrier to breast cancer screening utilisation in low-income and

middle-income countries.^{32–34} Hereby, it was interpreted as a mediator between upholding traditional cultural beliefs and the use of preventive medicine.³⁴ On the other hand, a review on faith-based interventions revealed that they can increase the knowledge about cancer screenings.³⁵ Thus, all these works focus on specific regions. To the best of our knowledge, there is no review that solely focuses on all studies on the influence of religion on cancer screening utilisation. Regarding the different results, an overview on findings concerning this association could identify individuals at risk for low screening rates and hereby lay the groundwork for interventions related to religion that would assist in increasing the ineffectively low screening rates.

Thus, the aim of this systematic review is to summarise the quantitative evidence on the association between religion and cancer screening utilisation. We abstained from including studies that were using other research methods, such as qualitative ones, because they tend to differ widely in their approaches by which they assess potential associations between different factors. Through this, synthesising the evidence that was gained from the papers which we considered for our review would require additional and specific methods besides the ones we already have to apply to synthesise the results that were gained through quantitative approaches. Furthermore, the latter designs are more likely to produce results which can be generalised and also measure the strength of an association. Regarding the organisational and social aspects of religion, which were underlined by recent research that regarded religion's relationship to health outcomes,³⁶ we decided to solely focus on this construct, and to exclude spirituality as long as it is not related to religion, as it does not include these kinds of aspects. That separation may also be justified by the social aspect, which is more present in religion than in spirituality, and which was found to be significantly related to religion's influence on health-related outcomes.³⁶ We expect different aspects of religion to be represented among the evidence found on its association to cancer screenings, such as its intensity¹⁵ or religious attendance.²¹ Both these variables may enhance screening use due to the pathways which we described above.

Such a review could help to increase the quite low screening rates,⁴ for example, by identifying populations who are at risk of underuse. This especially affects the lack of knowledge, which is among the most important barriers to screening uptake⁸ and can at least partly be reduced by a stronger orientation towards religion.³⁵ With the evidence gained from this review, intervention designers could judge whether religious locations or religious people are appropriate target places or populations for certain actions, for example, whether information campaigns could take place in churches or whether highly religious people need to be more addressed by interventions.

Our review could assist in identifying groups that are at risk of underusing cancer screenings, or in exploring

research gaps, such as a lack of longitudinal studies. In addition, as a quality assessment will be performed, so that possible quality limitations could be revealed.

METHODS AND ANALYSIS

This protocol is conducted under consideration of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) Protocols guidelines.³⁷ It is registered to the International Prospective Register of Systematic Reviews (PROSPERO).

Eligibility criteria

We will introduce our inclusion and exclusion criteria in the following two sections. Ahead of defining our final criteria, we will undertake a pretest. Therefore, a sample of 100 articles will be rated for eligibility. If necessary, we will modify our eligibility criteria.

Inclusion criteria

We will include:

- ▶ quantitative studies reporting the association between religion (confession, engagement or importance of religion) and cancer screening.
- ▶ studies published in scientific, peer-reviewed journals.

Exclusion criteria

We will exclude:

- ▶ studies not considering the relationship between religion and cancer screening.
- ▶ studies exclusively examining a specific sample (eg, sects or ethnic minorities), as the aim of our review is to summarise the existing evidence on the general association between religion and cancer screening utilisation and not to study how it turns out to be in specific groups.
- ▶ study design not observational, as we aim to conduct a quantitative review.
- ▶ studies not published in German or English.
- ▶ studies not published in scientific, peer-reviewed journals.

Three leading medical and psychological online databases (CINAHL, PsycInfo and PubMed) will be searched in June 2020. While some guidelines (such as the Cochrane Guidelines)³⁸ recommend to include grey literature, we decided to exclude such literature in order to ensure a certain quality. Therefore, we only included peer-reviewed articles. We also abstained from using databases that do not account for the quality of the materials included, such as Google Scholar. Before submitting the final systematic review, the results will be updated, so that an up-to-date version is submitted. To identify eligible articles, a predefined search algorithm will be used. For further information, please see [table 1](#). There are no restrictions regarding the year of the articles. Two reviewers will manually and independently scan the references from the articles included in our review.

Table 1 Search strategy (PubMed)

1	Religio*[Title/Abstract]
2	Faith[Title/Abstract]
3	Spiritualit*[Title/Abstract]
4	#1 OR #2 OR #3
5	Preventive health care[Title/Abstract]
6	Preventive health service*[Title/Abstract]
7	Cancer screening[Title/Abstract]
8	Melanoma screening[Title/Abstract]
9	Colonoscopy[Title/Abstract]
10	Pap[Title/Abstract]
11	Mammography[Title/Abstract]
12	FOBT[Title/Abstract]
13	Guaiaac[Title/Abstract]
14	CRC screening[Title/Abstract]
15	Cervical screening[Title/Abstract]
16	Breast exam[Title/Abstract]
17	Flexible sigmoidoscopy[Title/Abstract]
18	PSA[Title/Abstract]
19	#5 OR #6 OR #7 OR #8 OR #9 OR #10 OR #11 OR #12 OR #12 OR #13 OR #14 OR #15 OR #16 OR #17 OR #18
20	#3 AND #19

Data management

Articles will be organised using EndNote V.20. If the heterogeneity between the study allows carrying out a meta-analysis, ((1) association between religious affiliation and use of cancer screenings, (2) association between religious intensity and use of cancer screenings, (3) association between religious attendance and use of cancer screenings), StataMP V.17.0 or RevMan V.5 will be used to do so. The outcome of a meta-analysis would be the utilisation of cancer screening. As there are several screening types, such as colonoscopy or mammograms, it could both be reasonable to consider all types of screenings or a specific one as the dependent variable. Our choice will mainly depend on the frequency by which the studies included in our review assess a specific procedure.

Study selection process

After searching the electronic databases and scanning the results they have provided, the articles will be rated for inclusion or exclusion in a two-step process that relies on the criteria specified in sections 2.2 and 2.3 during both stages. It will be carried out independently by two reviewers (BK and LB): first, titles and abstracts will be screened; second, if necessary, the full texts will be screened. Disagreements will be solved by discussion or by including a third party (AH).



Data collection process and data items

Two reviewers (BK and LB) will extract the data: one will summarise the most important characteristics, the other one will perform a cross-check. Once more, if disagreements occur, they will be dissolved by discussion or by contacting a third party (AH). In case of ambiguity, the authors will be contacted. The following data will be extracted: study design, sample characteristics, measurements, statistical analysis and findings concerning the association between religion and cancer screening. This procedure is based on the requirements from the PRISMA guidelines.

Assessment of study quality

We rely on the quality assessment tool for healthcare-related studies from Hohls *et al* and Stuhldreher *et al*.^{39 40} Two reviewers (BK and LB) will rate the studies' quality. Again, disagreements will be resolved through discussion or together with a third person (AH).

Data synthesis

The study identification process will be illustrated employing a PRISMA flowchart. The results will be presented in both text and tables. If possible, our findings will be categorised by cancer screening (eg, mammography, colorectal screening) or by religious group (eg, Christians, Muslims).

We will conduct a meta-analysis, if applicable. This mostly depends on the degree of heterogeneity between the studies included in our review. If the I^2 test states that conducting meta-analysis is reasonable, this procedure will also be carried out by two authors (AH and BK). Random-effects or fixed-effects analyses grounded on inverse variance techniques will be applied. The results will also be displayed in ORs.

Patient and public involvement statement

The present protocol did not involve individual patients or public agencies.

Strengths and limitations

To the best of our knowledge, this is the first systematic review regarding the association between religion and participation in cancer screenings. It will fulfil high-quality standards, as it is performed independently by two reviewers. Finally, several types of cancer screening are included.

However, a potential weakness could be the heterogeneity between the studies listed in our review, which could prohibit the conduction of a meta-analysis. Moreover, it should be acknowledged that some studies (eg, grey literature) could be excluded. Nevertheless, only including peer-reviewed articles ensures a certain quality of the studies. In addition, our review will only include articles written in German or English language. Therefore, the articles that will be included may overrepresent Christian samples, as this is the most important religion in German-speaking and English-speaking countries. On the other hand, English is the most common language

in the scientific discourse, so that not only nationally related studies but studies from all around the world are published in it.

ETHICS AND DISSEMINATION

As no primary data are collected, the approval from an ethics committee is not required. Our review will be published in a peer-reviewed, scientific journal.

Contributors The study concept was developed by BK, H-HK, LB and AH. The manuscript of the protocol was drafted by BK and critically revised by H-HK, LB and AH. The search strategy was developed by BK, H-HK, LB and AH. Study selection, data extraction and quality assessment will be performed by BK and LB, with AH as a third party in case of disagreements. All authors have approved the final version of the manuscript.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

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REFERENCES

- Bray F, Ferlay J, Soerjomataram I, *et al*. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA Cancer J Clin* 2018;68:394–424.
- Robert-Koch-Institut. Gesellschaft der epidemiologischen Krebsregister in Deutschland e.V. Krebs in Deutschland 2007/2008, 2012. Available: https://www.rki.de/DE/Content/Gesundheitsmonitoring/Gesundheitsberichterstattung/GBEDownloadsB/KID2012.pdf?__blob=publicationFile
- Barnes B, Kraywinkel K, Nowossadeck E, *et al*. Bericht zum Krebsgeschehen in Deutschland 2016, 2016. Available: <https://edoc.rki.de/bitstream/handle/176904/3264/28oaKvmif0wDk.pdf?sequence=1&isAllowed=y>
- Spuling S, Ziegelmann J, Wünsche J. Was tun wir für unsere Gesundheit? Gesundheitsverhalten in der zweiten Lebenshälfte. In: Mahne K, Wolff J, Simonson J, *et al*, eds. *Altern Im Wandel Zwei Jahrzehnte Deutscher Alterssurvey (DEAS)*. Berlin: Deutsches Zentrum für Altersfragen (DZA), 2016.
- Andersen RM. Revisiting the behavioral model and access to medical care: does it matter? *J Health Soc Behav* 1995;36:1–10.
- Beydoun HA, Beydoun MA. Predictors of colorectal cancer screening behaviors among average-risk older adults in the United States. *Cancer Causes Control* 2008;19:339–59.
- Hsia J, Kemper E, Kiefe C, *et al*. The importance of health insurance as a determinant of cancer screening: evidence from the women's health initiative. *Prev Med* 2000;31:261–70.
- Saß A, Wurm S, Ziese T. Inanspruchnahmeverhalten. In: Böhm K, Tesch-Römer C, Ziese T, *et al*, eds. *Beiträge zur Gesundheitsberichterstattung des Bundes Gesundheit und Krankheit im Alter*. Berlin, 2009.
- Bremer P, Wübker A. Soziale Ungleichheit und Inanspruchnahme medizinischer und präventiver Leistungen in Deutschland: eine empirische Analyse. *Diskussionspapiere // Wirtschaftswissenschaftliche Fakultät, Universität Witten, Herdecke, No 20/2011* 2012.

- 10 Gorin SS, Heck JE. Cancer screening among Latino subgroups in the United States. *Prev Med* 2005;40:515–26.
- 11 Sieverding M, Mattered U, Ciccarello L. Gender differences in FOBT use: evidence from a large German survey. *Z Gastroenterol* 2008;46(Suppl 1):47–51.
- 12 Sieverding M, Mattered U, Ciccarello L. Prostatakarzinomfrüherkennung in Deutschland. Untersuchung einer repräsentativen Bevölkerungsstichprobe. *Urologe* 2008;47:1233–8.
- 13 Benjamins MR. Predictors of preventive health care use among middle-aged and older adults in Mexico: the role of religion. *J Cross Cult Gerontol* 2007;22:221–34.
- 14 Benjamins MR. Religious influences on preventive health care use in a nationally representative sample of middle-age women. *J Behav Med* 2006;29:1–16.
- 15 Benjamins MR, Ellison CG, Krause NM, et al. Religion and preventive service use: do congregational support and religious beliefs explain the relationship between attendance and utilization? *J Behav Med* 2011;34:462–76.
- 16 Hill TD, Burdette AM, Ellison CG, et al. Religious attendance and the health behaviors of Texas adults. *Prev Med* 2006;42:309–12.
- 17 Leyva B, Nguyen AB, Allen JD, et al. Is religiosity associated with cancer screening? Results from a national survey. *J Relig Health* 2015;54:998–1013.
- 18 O'Reilly D, Kinnear H, Rosato M, et al. Uptake of breast screening is influenced by current religion and religion of upbringing. *J Relig Health* 2013;52:1168–76.
- 19 Reindl Benjamins M, Brown C. Religion and preventative health care utilization among the elderly. *Soc Sci Med* 2004;58:109–18.
- 20 Zapka JG, Stoddard AM, Costanza ME, et al. Breast cancer screening by mammography: utilization and associated factors. *Am J Public Health* 1989;79:1499–502.
- 21 Kretzler B, König H-H, Hajek A. Religious attendance and cancer screening behavior. *Front Oncol* 2020;10:583925.
- 22 Glock CY. On the study of religious commitment. *Relig Educ* 1962;57:98–110.
- 23 Ahrenfeldt LJ, Möller S, Hvidt NC, et al. Religiousness and lifestyle among Europeans in SHARE. *Public Health* 2018;165:74–81.
- 24 Hill TD, Ellison CG, Burdette AM, et al. Religious involvement and healthy lifestyles: evidence from the survey of Texas adults. *Ann Behav Med* 2007;34:217–22.
- 25 Krause N, Shaw B, Liang J. Social relationships in religious institutions and healthy lifestyles. *Health Educ Behav* 2011;38:25–38.
- 26 Saroglou V. Religion and the five factors of personality: a meta-analytic review. *Pers Individ Dif* 2002;32:15–25.
- 27 Aschwanden D, Gerend MA, Luchetti M, et al. Personality traits and preventive cancer screenings in the health retirement study. *Prev Med* 2019;126:105763.
- 28 Leyva B, Allen JD, Tom LS, et al. Religion, fatalism, and cancer control: a qualitative study among Hispanic Catholics. *Am J Health Behav* 2014;38:839–49.
- 29 Zumstein-Shaha M, Ferrell B, Economou D. Nurses' response to spiritual needs of cancer patients. *Eur J Oncol Nurs* 2020;48:101792.
- 30 Zumstein-Shaha M, Alder J. Welche Fachpersonen zeigen sich in der Literatur zuständig für die spirituellen Bedürfnisse von Patientinnen und Patienten mit einer neuen Krebsdiagnose? *Spiritual Care* 2018;7:281–91.
- 31 Winter-Pfändler U, Flannelly KJ. Patients' expectations of healthcare chaplaincy: a cross-sectional study in the German part of Switzerland. *J Relig Health* 2013;52:159–68.
- 32 Bowser D, Marqusee H, El Koussa M, et al. Health system barriers and enablers to early access to breast cancer screening, detection, and diagnosis: a global analysis applied to the MENA region. *Public Health* 2017;152:58–74.
- 33 Khan TM, Leong JPY, Ming LC, et al. Association of knowledge and cultural perceptions of Malaysian women with delay in diagnosis and treatment of breast cancer: a systematic review. *Asian Pac J Cancer Prev* 2015;16:5349–57.
- 34 Chan DNS, So WKW. A systematic review of the factors influencing ethnic minority women's cervical cancer screening behavior: from Intrapersonal to policy level. *Cancer Nurs* 2017;40:E1–30.
- 35 Hou S-I, Cao X. A systematic review of promising strategies of Faith-Based cancer education and lifestyle interventions among racial/ethnic minority groups. *J Cancer Educ* 2018;33:1161–75.
- 36 Chen Y, Kim ES, VanderWeele TJ. Religious-service attendance and subsequent health and well-being throughout adulthood: evidence from three prospective cohorts. *Int J Epidemiol* 2021;49:2030–40.
- 37 Shamseer L, Moher D, Clarke M, et al. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015: elaboration and explanation. *BMJ* 2015;349:g7647.
- 38 Higgins J, Thomas J, Chandler J. *Cochrane Handbook for systematic reviews of interventions*. 2nd ed. Chichester: John Wiley & Sons, 2019.
- 39 Hohls JK, König H-H, Raynik YI, et al. A systematic review of the association of anxiety with health care utilization and costs in people aged 65 years and older. *J Affect Disord* 2018;232:163–76.
- 40 Stuhldreher N, Konnopka A, Wild B, et al. Cost-of-illness studies and cost-effectiveness analyses in eating disorders: a systematic review. *Int J Eat Disord* 2012;45:476–91.