FACTORS INFLUENCING WOMEN WITH DISABILITY TO ACCESS BREAST AND CERVICAL CANCER SCREENING: A SCOPING REVIEW

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Abstract. Women with disabilities experience disparities in cancer screening, especially cervical cancer and breast cancer. Mostly women with disabilities detected at an advanced stage compared to women without disabilities. The aim of this research was to review the factors influencing women with disability to access breast and cervical cancer screening. The results of this study can be used as a guide to help women with disabilities access cancer screening and treatment. A scoping review is following the PRISMA-ScR guidelines. We searched for English articles published in the last five years in four databases namely PubMed, Google Scholar, ScienceDirect and ProQuest. The quality of the articles was assessed using the Mixed Methods Appraisal Tool (MMAT). The data obtained were analyzed through a textual narrative synthesis. The results of the study found that similar factors influence how women with disabilities access cancer screening services when compared to women without disabilities, but they are also exacerbated by the situation of their disability. Other factors that influencing women with disability to access screening are demographic factors, habits and history of other diseases, environment, social support, knowledge, access to health services and access to information. The conclusion of the study shows that there is a need for support for cancer screening service providers to understand the barrier of women with disabilities and be adjusted to the severity of their disability.

Keywords: disability, cervical cancer, breast cancer, screening

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INTRODUCTION

Based on the Sustainable Development Goals (SDGs), everyone has the right to access health services without discrimination, including people with disabilities (UN, n.d.a). The number of people with disabilities worldwide is estimated at more than 1 billion. This amount is equivalent to about 15% of the world's human population. This number will continue to increase along with chronic health conditions and aging (WHO, 2021). The number of women in the USA increase getting to around 36 million women. Women with disabilities may require special care to meet their individual needs. In addition, they need the same general health care as women without disabilities (US CDC, 2020).

One of the specific needs of women includes their reproductive health issues. One aspect of reproductive health is cancer prevention. Although cancer is more common in men and the death rate is higher in men, cancer in women should be wary of it. Breast cancer is one of the most common cancers in the world and the death rate from this type is higher in developing countries (Momenimovahed and Salehiniya, 2019). In addition to breast cancer, cervical cancer caused by the Human Papiloma Virus (HPV) was a female killer and is listed as the second most common female malignant tumor (Zhang *et al*, 2020).

Women with disabilities must be aware of the health risks that threaten them. Moreover, heart disease, diabetes, cancer, or stroke are three times more likely to occur in adults with disabilities than in normal adults (US CDC, 2018). As a cancer prevention step, cancer screening is carried out. Cancer screening is looking for cancer before a person has any symptoms. Screening tests can help find cancer in its early stages before symptoms appear. When abnormal tissue or cancer is found early, it may be easier to treat or cure.

By the time symptoms appear, cancer may have grown and spread.

People with disabilities may be less likely to participate in cancer screening than people without disabilities (Floud *et al*, 2017). Women with disabilities of all ages often have difficulty with physical access to health services (UN, n.d.b). Even though cervical cancer can be detected early, it is the most easily preventable female cancer, with regular screening tests and follow-up. Women need to get tested for cervical cancer because 6 out of 10 cervical cancers occur in women who have never had a Pap test or have not had a test in the past five years (US CDC, 2018). Women with cervical cancer disabilities, especially severe disabilities, are diagnosed at an advanced stage, receive less treatment, and have a higher mortality rate, compared to patients without disabilities (Choi *et al*, 2021).

Breast cancer is also preventable cancer. Women with disabilities, same as women without disabilities, should receive a mammogram. However, women with disabilities were significantly less likely to be screened within the recommended guidelines (Magasi *et al*, 2022). Women with disabilities have more or less received mammography in the last two years even though they are women who are advised to have a mammogram examination at the age of 50-74 years (Courtney-Long *et al*, 2011). Women with disabilities have higher breast cancer mortality rates and are less likely to undergo standard therapy after breast-conserving surgery than other women (McCarthy *et al*, 2006). Based on this issue, this study aimed to review the factors influencing women with disability to access breast and cervical cancer screening.

MATERIALS AND METHODS

Study design

The preparation of this report follows the PRISMA Extension for Scoping Reviews (PRISMA-ScR) guidelines. The preparation of this report follows the guidelines of the PRISMA-ScR. Scoping review is an attempt to synthesize knowledge by taking a systematic approach so as to gather

relevant evidence, and identify the main concepts, theories, sources, and knowledge gaps (Tricco *et al*, 2018). The meta-analysis could not be carried out because the different types of disability, the types of cancer, the outcome with varying length of follow-up and the limited number of scientific articles that discussed factors related to women's access to cervical cancer and breast cancer screening.

Search strategy

Data were collected in July-August 2022. English-language research conducted from 2018 to 2022 according to topics was searched in PubMed, Google Scholar, ProQuest and Science Direct. The keywords used were a combination of Medical Subject Heading (MeSH) terms and relevant keywords in a different order: "cervical cancer screening", "breast cancer screening", "mammogram", "papsmear", "disability", "women". We also identify the synonyms of the keywords. Boolean operators are used, namely OR, AND, NOR, NOT, *etc*. Keyword search in cervical cancer screening were "cervical cancer screening" AND "disability women" while Keyword search in breast cancer screening were "breast cancer screening" AND "disability women".

Study selection

The inclusion criteria applied in selecting articles were study in English, evaluating factors related to women with disability accessing the breast and/or cervical cancer screening and the study was published 2018-2022. The exclusion criteria for this study were case reports, letters to editors, review study, abstracts without full text and conference paper. We followed the definition of the term women with disability from the World Health Organization (WHO) but we were referring to the most common types of disabilities in the articles. Women with disability in this review focused visual impairment, mobility impairment, physical disability, intellectual disability and Deaf/deaf. According to WHO, disability is any condition of the body or mind (impairment) that makes it more difficult for the person with the condition to do certain activities (activity limitation) and interact with

the world around them (participation restrictions) (US CDC, 2020). Articles that discussed other cancer type were not included. We also followed PICO framework that presented in Table 1.

Data collection process

The authors performed title and/or abstract screening independently of the included articles using standard Microsoft Excel forms. The data obtained were combined in one folder and then carried out an assessment. The number of manuscripts was not divided by two so that each author analyzes all existing manuscripts. The results were compared with each other. A third external collaborator was consulted to address disagreements in consensus.

Study quality

Researchers conducted a risk of bias assessment study with the help of critical appraisal tools. The research quality in this review was analyzed using critical appraisal tools, namely the Mixed Methods Appraisal Tool (MMAT) version 2018. The MMAT is a critical appraisal tool that is designed for the appraisal stage of systematic mixed studies reviews, *ie*, reviews that

Table 1

PICO framework

Criteria	Determinants
P (Population)	Women with disability (visual impairment, mobility impairment, physical disability, intellectual disability and deaf)
I (Intervention)	Cervical cancer screening and/or breast cancer screening
C (Comparison)	Women without disability
O (outcome)	Pap smear receipt, mammography receipt

include qualitative, quantitative and mixed methods studies (Hong *et al*, 2018). The results of the analysis are presented in Table 2.

Effect measures, data abstraction and synthesis

Scoping review used the framework of Arksey and O'Malley following five stages: identifying the research question, identifying relevant studies, study selection, data extraction and analysis and collating, summarizing and reporting the results (Levac *et al*, 2010). The type of synthesis used is in the form of narrative synthesis. The data of research characteristics are arranged in Table 3. Data on the characteristics of respondents and factors related to screening are described in a narrative manner.

RESULTS

Articles results screening

In searching the database, 139 abstracts were found from searches with relevant keywords. 14 records were duplicated in the several databases. The authors then screened results for possible inclusion. The findings of 115 articles must be excluded from the eligibility list. After this stage, the researcher tried to re-examine the assessment results, but the manuscript finally entered the exclusion criteria. After screening, 10 full-text articles were selected and examined in detail to determine eligibility. Furthermore, 8 articles were determined that met the requirements. Figure 1 shows the study selection flowchart.

Research characteristics and article quality assessment results

The results of the article quality assessment using MMAT concluded the mean of qualitative study is 4.25 and quantitative study non-randomized controlled trial is 3.75. The results of the critical appraisal are included in Table 1 and the characteristic in Table 2. Most of the research analyze

Table 2

The results of article quality using MMAT

Study design, reference and study site	Assessment criteria					Total score
Qualitative	Is the qualitative approach appropriate to answer the research question?	Are the qualitative data collection methods adequate to address the research question?	Are the findings adequately derived from the data?	Is the interpretation of results sufficiently substantiated by data?	Is there coherence between qualitative data sources, collection, analysis and interpretation?	
Arana-Chicas *et al* (2019) USA	Y	Y	Y	Y	Y/N	4.5
Kilic *et al* (2019) Turkey	Y	Y	Y	Y	N	4
Quantitative non-randomized	Are the participants representative of the target population?	Are measurements appropriate regarding both the outcome and intervention (or exposure)?	Are there complete outcome data?	Are the confounders accounted for in the design and analysis?	During the study period, is the intervention administered (or exposure occurred) as intended?	

Table 2 (cont)

Study design, reference and study site	Assessment criteria				Total score
Wu et al (2021) USA	Y	Y	Y	N	4
Sakellariou et al (2019) UK	Y	Y	N	Y/N	3.5
Pearson et al (2022) New Zealand	Y	Y	Y	N	4
Baruch et al (2022) Israel	Y	Y	N	Y/N	3.5
Zanwar et al (2022) Portland, Oregon	Y	Y	Y/N	N	3.5
Kushalnagar et al (2019) USA	Y	Y	N	Y	4

MMAT: Mixed Methods Appraisal Tool; N: No; UK: United Kingdom; USA: United States of America; Y: Yes

Table 3
Research characteristics

No.	Reference and study site	Research type	Number of sample and population	Type of disability	Data type and data collection	Outcome	Data analysis
1.	Wu et al (2021) USA	Retrospective, longitudinal cohort study	1044 patients were matched (348 in each group)	Visual impairment patients with NVL, PVL and SVL	Secondary data	Proportion of participants undergoing mammography and adjusted odds ratios of undergoing mammography within 2 years of follow-up.	Multivariable conditional logistic regression modeling compared the odds of undergoing screening mammography within a 2-year follow-up period among the 3 groups.
2.	Sakellariou et al (2019) UK	Secondary analysis of cross-sectional data	6,794 women without mobility impairment and 2,697 women with mobility impairment	Mobility impairment	Secondary data and interview	Data undergoing cervical smears and mammograms	Chi-square tests

Table 3 (cont)

No.	Reference and study site	Research type	Number of sample and population	Type of disability	Data type and data collection	Outcome	Data analysis
3.	Pearson et al (2022) New Zealand	Cross-sectional study	84 women with disability	Physical only, sensory only, physical and sensory only, and other combination	Primary data, Question-naire-online survey	Percent ever had smear (of those eligible), percent self-examine breasts, percent ever had a mammogram (of those eligible)	Chi-square tests, Fisher's Exact test
4.	Baruch et al (2022) Israel	Cross-sectional study	391,259 patients - (6,720 Disability and 384,539 No disability)	Physical disability	Secondary data- the electronic medical records	Pap smear received	The chi square test; crude odds ratio (cOR) was based on the univariate analysis. Variables that were statistically significant in the univariate analysis were entered into a logistic regression analysis that assessed adjusted odds ratio (aOR) for associations with disabilities and other covariates.

Table 3 (cont)

No.	Reference and study site	Research type	Number of sample and population	Type of disability	Data type and data collection	Outcome	Data analysis
5.	Arana-Chicas et al (2019) USA	Qualitative study	30 women	Intellectual disabilities	In-depth qualitative interviews	Mammogram received	Analysis thematic
6.	Kilic et al (2019) Turkey	Qualitative study	16 women	Physical disabilities	Primary data, semi-structured face-to-face interviews	Cervical and breast cancer screening received	Seven-step phenomenological data analysis method- thematic
7.	Zanwar et al (2022) Portland Oregon	Cross-sectional analyses	With Disability 10,688 (15.39%) Without Disability 57,819 (84.61%)	Any disability based on presence of limitations in basic actions or complex activities	Secondary data	Pap testing	Poisson regression
8.	Kushalnagar et al (2019) USA	Cross-sectional	Data for adherence to Pap (529 deaf women and 1,119 hearing women) and mammogram screening (324 deaf women and 1,086, hearing women)	Deaf women	Secondary data, data survey	Pap test and mammogram receipt. There are admission rules that must be met within a certain age range.	Chi-square and binary logistic analysis

NVL: no vision loss; PVL: partial vision loss; SVL: severe vision loss; UK: United Kingdom; USA: United States of America
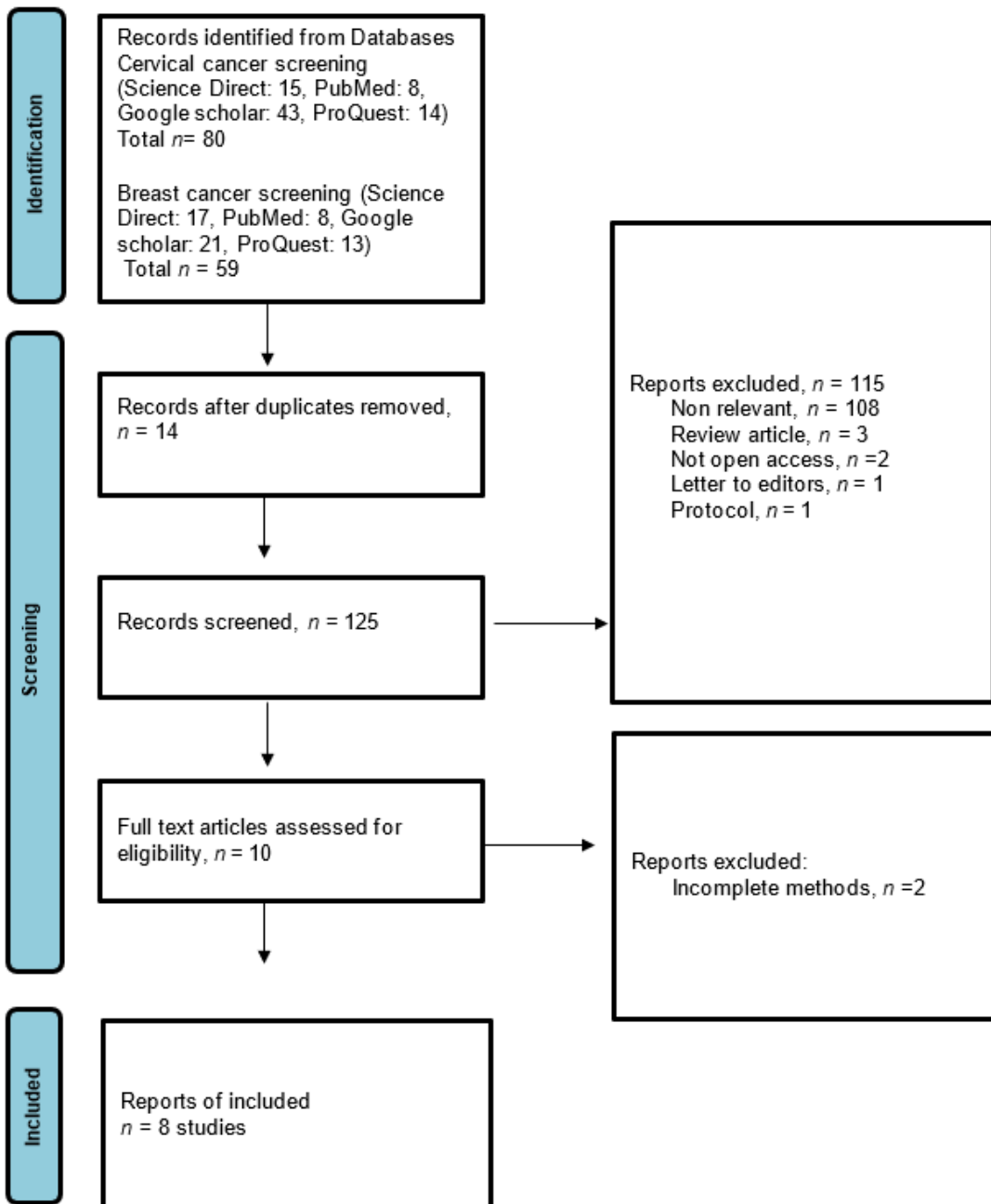
Records identified from Databases
Cervical cancer screening
(Science Direct: 15, PubMed: 8,
Google scholar: 43, ProQuest: 14)
Total n= 80

Breast cancer screening (Science
Direct: 17, PubMed: 8, Google
scholar: 21, ProQuest: 13)
 Total n = 59

Records after duplicates removed,
n = 14

Records screened, n = 125

Full text articles assessed for
eligibility, n = 10

Reports of included
n = 8 studies

Reports excluded, n = 115
  Non relevant, n = 108
  Review article, n = 3
  Not open access, n =2
  Letter to editors, n = 1
  Protocol, n = 1

Reports excluded:
  Incomplete methods, n =2

Identification

Screening

Included

Fig 1 -   PRISMA flow chart

the existing secondary data, because the outcome is the screening data. In indicators, not all studies explained whether how many times did respondents do cancer screening.

Characteristic of women with disability and women without disability as a comparison

The study involved different types of disability as it was known that the researcher included the degree of visual disability. This was also carried out in other studies that discussed the severity of mobility access. Education, income, domicile, race, marital status were widely explored. Women with disabilities aged over 30 years to around 69 years were respondents in this study. They came from a variety of races and skin colors, lived mostly in urban areas, had education levels mostly in primary or junior secondary education, and had lower incomes than women without disabilities. It also collaborated with being inactive in terms of work. Most women with disabilities had access to health insurance. Some lived in houses financed by the state, some lived with their families or live alone. Marital status also varies, some were divorced, separated, or widowed.

Finding

The results of the study found that similar factors influenced how women with disabilities accessed cancer screening services, but they were also exacerbated by the situation of their disability. Other factors that influenced women with disability to access screening were demographic factors, habits and history of other diseases, environment, social support, knowledge, access to health services and access to information.

Type and severity of disability

Types of severity of disability such as no vision loss (NVL), partial vision loss (PVL), and severe vision loss (SVL) turned out to be different in

their availability for examination (Wu *et al*, 2021). Type of disability did not affect willingness or time span for breast or cervical cancer screening although there were differences in the experience of barriers. A higher proportion of those with multiple types of disability experience barriers to the service environment to perform cervical smear examinations (Pearson *et al*, 2022).

Screening records performed

Undergoing mammography during the retrospective period (OR = 20.63; 95% CI: 10.40-40.93; *p*<0.001) and undergoing colonoscopy during the study period (OR = 3.17; 95% CI: 1.85-5.45; *p*<0.001) was associated with an increased likelihood of undergoing mammography during the follow-up period among all groups (Wu *et al*, 2021). One study found that of the 30 women with disabilities interviewed, more than half of the respondents had received a mammogram annually and 10 respondents were not screened adequately (Arana-Chicas *et al*, 2020). Another study also found that more than half of the total respondents had received a pap smear. This number tends to be smaller when compared to women without disabilities (OR = 0.76; 95% CI: 0.72-0.80; *p*<0.001) (Baruch *et al*, 2022).

Demographic factors

Related demographic factors such as age, place of residence, education, income, language, religion and race. Older age is a lower determinant of cancer screening (Baruch *et al*, 2022). In addition, the place of residence can influence women to do the test. Women in Scotland were 1.5 times (95% CI: 1.08-2.10) more likely to take the test than women in England (Sakellariou and Rotarou, 2019). Urban residence was associated with lower rates of breast self-examination (Pearson *et al*, 2022). Women with upper secondary education were 1.4 times more likely (95% CI: 1.10-1.67) to take the test than women with primary or junior secondary. Women from the higher quintiles (third and fifth quintiles) had a higher chance of using mammography, with women in the fifth quintile 1.5 times (95% CI: 1.02- 2.15) higher odds

than women from the first quintile education (Sakellariou and Rotarou, 2019). Unemployment related to never having a cervical smear, having insufficient income related to never having a mammogram (Pearson *et al*, 2022). Low socioeconomic status affects screening examinations (Baruch *et al*, 2022). In that use, non-English preferred language was associated with desirability for screening in certain countries (Pearson *et al*, 2022). Religious minorities were also associated with lower Pap smears (Baruch *et al*, 2022). In studies in countries such as the USA, issues of race and skin color are related to access to cancer screening (Zanwar *et al*, 2022). Race and ethnicity were not associated with cancer screening adherence (Kushalnagar *et al*, 2019).

Environment and support

In women with mobility impairments, married women were twice as likely to have a mammogram than women who had never been married (OR = 2.07, 95% CI: 1.49-to 2.88) (Sakellariou and Rotarou, 2019). Living without family/partner is associated with low of cancer screening participation (Pearson *et al*, 2022). Extended family support and positive attitude increase the chances of women with disabilities having cancer screening (Arana-Chicas *et al*, 2020). Dependence on others, environmental and structural factors associated with low of cancer screening participation (Kilic *et al*, 2019).

Knowledge, access to health services and information

Specific barriers to screening include accessibility, service environment, and information (Pearson *et al*, 2022), lack of awareness of breast ultrasound, lack of mammogram education (Arana-Chicas *et al*, 2020), personal factors; such as lack of knowledge, fear and shame, feeling anxious about the examination process and conditions for proper and time-consuming examinations were met, and health workers were informed about the needs of persons with disabilities (Kilic *et al*, 2019).

DISCUSSION

The results of the study found that similar factors influence how women with disabilities access cancer screening services, but they are also exacerbated by their disability situation such as there are differences in access to women with visual impairment with grade or multiple disabilities or people who have more than one type of disability. In addition, health care providers for women with disabilities need to ensure conditions during screening, provide sufficient time and understand their needs. Other variables such as race in demographic factors generally affect aspects not only on access to cancer screening. Both deaf and hearing-impaired women had similar positive predictors for Pap adherence: younger age, self-identity as black, having a higher level of education, being in a current or previous partnership, having health insurance, and having a regular provider. For both the deaf and hearing sample, positive predictors included older age, self-identification as black or Hispanic, higher education, being in a current partnership, having a regular provider, and having a family history of cancer. Income and medical history of cancer were not significant predictors of breast cancer screening or cervical cancer adherence in either sample of women (Kushalnagar *et al*, 2019).

Disability is a human rights issue, where persons with disabilities are subjected to various violations of their rights, including acts of violence, harassment, prejudice and disrespect because of their disability, which intersects with other forms of discrimination based on age and gender, among other factors. Persons with disabilities also face barriers, stigmatization and discrimination when accessing health and health-related services and strategies. Disability is a development priority because of its higher prevalence in low-income countries and because disability and poverty reinforce and perpetuate one another (WHO, 2021).

Problems in accessing cancer screening have been around for a long time and have not been completely resolved. Research from Steele *et al* (2017) found that the reasons people avoid cancer screening are difficulty getting an appointment, wait time at the clinic is too long and no transportation

to the clinic. Healthcare systems need to train the healthcare workforce to respect women with disability (WWD), pay attention to their preferences and choices, provide non-discriminatory and respectful treatment, and address stigmatizing attitudinal towards WWD. In addition, families and communities need to participate in advocacy efforts to promote WWD's access to health care (Matin *et al*, 2021).

This study did not determine the factors that might affect examinations for each type of disability due to the limited number of studies. This reason also makes this research unable to do a meta-analysis. There are many differences in the studies conducted ranging from the characteristics of the sample to not all studies making comparisons involving people without disabilities. Standardization of definitions in disability research that focuses on health disparities and uniformity in data sources and measures, as well as a framework for approaching primary and secondary disability in the assessment of health outcomes are necessary (Wisdom *et al*, 2010).

In summary, similar factors affect how women with disabilities access cancer screening services, but are also exacerbated by their disability situation such as differences in access for blind women with multiple or multiple degrees of disability or persons with disabilities who have more types of disabilities. This study shows the need for support for cancer screening service providers to understand the needs of women with disabilities and be adjusted to the severity of their disability.

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CONFLICT OF INTEREST DISCLOSURE

There is no conflict of interest.

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