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RESEARCH ARTICLE

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Gynaecological cancer resources for Aboriginal and Torres Strait Islander women: A resource audit

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Abstract

Issue Addressed: Aboriginal and Torres Strait Islander women experience considerable disparities in gynaecological cancer outcomes. Accessible and culturally appropriate health promotion resources about gynaecological cancers may support health literacy in this area. This study aimed to determine the understandability, actionability, readability, and cultural relevance of gynaecological cancer health literacy resources for Aboriginal and Torres Strait Islander consumers, families, and caregivers.

Methods: We conducted a general Google search and targeted searches of Australian gynaecological cancer organisation websites in January and February 2022. Resources were assessed for understandability, actionability and cultural relevance to Aboriginal and Torres Strait Islander audiences.

Results: We found 16 resources. The resources were generally understandable, actionable, readable, and culturally relevant, however, most resources were focused on cervical cancer prevention through vaccination and screening. Few resources focused other gynaecological cancer types or aspects of the cancer care continuum. While many resources contained elements that made them culturally relevant, areas for improvement were identified. These included: greater transparency relating to the Aboriginal and Torres Strait Islander leadership, governance, and involvement in the development of the resources as well as availability of different resource formats with an emphasis on visual aids.

Conclusions: This study highlighted a need for the development of resources relating to a wider range of gynaecological cancer types and different stages of the cancer care continuum for Aboriginal and Torres Strait Islander women.

So What? The development of a broader range of culturally appropriate gynaecological cancer health literacy resources, ideally developed through co-design with Aboriginal and Torres Strait Islander peoples, may contribute to addressing the disparities in gynaecological cancer outcomes for Aboriginal and Torres Strait Islander women.

KEYWORDS

Australian Aboriginal and Torres Strait Islander Peoples, neoplasms, women's health, health literacy, health promotion, health education, consumer health information

1 | INTRODUCTION

Resulting from the persistent health inequities within Australia, there are considerable disparities in cancer outcomes for Aboriginal and Torres Strait Islander people compared to other Australians. This is particularly evident in gynaecological cancers, which develop in the female reproductive system and are inclusive of cervical, ovarian, uterine/endometrial, vaginal, vulval, and fallopian cancers.[1] Aboriginal and Torres Strait Islander women have significantly higher incidence and mortality of gynaecological cancers (59.2 and 24.1 per 100 000, respectively) compared to other Australians (35.3 and 12.3 per 100 000).[2] These disparities further increase when examining individual cancers such as cervical cancer, where incidence rates are doubled and mortality rates are tripled compared to other Australian women (15.9 vs. 6.3, and 6.6 vs. 1.7 per 100, 000).[3]

The need for information is frequently cited as one of the most prevalent unmet supportive care needs among individuals affected by cancer, encompassing patients as well as their loved ones.[4,5] In a study of the unmet supportive care needs of Aboriginal and Torres Strait Islander adult cancer patients, women reported higher unmet needs for information and communication compared to their male counterparts.[6] Accessing information about cancer, and the health and medical aspects of caring for a patient with cancer was a key theme in a study exploring the needs of caregivers of Aboriginal and Torres Strait Islander cancer patients.[7] Access to high-quality and culturally appropriate gynaecological cancer information and education resources are required to help the individual and their family navigate the cancer journey and improve their health literacy, which in turn may contribute to addressing health disparities.

The importance of health literacy in influencing communication in cancer care is widely acknowledged.[8] Improving health literacy is a priority, as it is fundamental to improving Aboriginal and Torres Strait Islander cancer care and health outcomes.[9,10] Health literacy is a determinant of health and relates to an individual's access, comprehension, and application of the health information to improve well-being.[11] Comprehensive data regarding the level of health literacy of Aboriginal and Torres Strait Islander people is limited[12] however, it is likely to be lower than health literacy among non-Indigenous Australians,[13] and framed within the context of colonisation, racism, and collective historical trauma.[14] These factors have created structural barriers to engaging with the health system and accessing information, contributing to lower health literacy and poorer health outcomes.[14,15] Low health literacy, alongside a need for cultural safety and appropriate resources, are frequently reported findings within Aboriginal and Torres Strait Islander gynaecological cancer literature.[14,16–18]

Patient education materials are widely used to supplement information from health professionals and have been found to increase cancer health literacy.[19–21] Resources that promote understanding of gynaecological cancers are critical in reducing incidence and mortality throughout the cancer continuum, providing opportunities for earlier diagnosis, increasing decision-making capacity, and improving survivorship.[16,17,19,22–25] Aboriginal and Torres Strait Islander peoples have expressed a need for access to gynaecological cancer resources and information.[16,26,27] However, it is largely unknown what resources are available and whether they are accessible and culturally relevant. As such, the aim of this study is to determine the availability, understandability, actionability, readability, and cultural relevance of gynaecological cancer-related health literacy resources for Aboriginal and Torres Strait Islander consumers, families, and caregivers.

2 | METHODS

2.1 | Data collection

The search strategy included a general Google search and a targeted search of leading gynaecological cancer organisation websites within Australia. To replicate consumer information searches, we developed a search string that encompassed of a variety possible of terms relating to cancer, different types of gynaecological cancers, information, cancer care continuum, and the target population. (see Table 1) To minimise algorithmic-related results, all searches were conducted in web browsers using incognito mode with cleared search history. MK conducted the searches and retrieval of resources. Searches were conducted in January and February 2022.

2.1.1 | General Google search

Using the search string, we searched for resources until there was one complete page without relevant links (five pages of results). We also implemented a two-click from landing page restriction, whereby if a link found through the Google search required further simple navigation to access a resource it was considered for inclusion. Filters applied to the search results were English language and Australian.

2.1.2 | Targeted search

We first generated a list of websites known to host information about gynaecological cancer. (See Table 2). These websites were searched using the Google's 'site:' search function to restrict the search to only retrieve results from the organisation's website. Resources were extracted from the first three pages of results for each site. Due to the targeted nature of the search, the search terms were simplified

TABLE 1 Search terms.

gynaecological OR reproductive OR vulvar OR vaginal OR endometrial OR cervical OR uterine OR ovarian OR placental OR fallopian AND Cancer AND diagnosis OR treatment OR symptoms OR cure OR prevention OR support OR information OR information sheet OR fact OR fact sheet AND Aboriginal OR Torres Strait Islander

TABLE 2 Target websites searched.

Australia New Zealand Gynaecological Oncology Group (ANZGOG)
Australia Gynaecological Cancer Foundation (AGCF)
Cancer Australia
Cancer Institute NSW
Cancer Council Australia
Cancer Council New South Wales
Cancer Council Victoria
Cancer Council Western Australia
Cancer Council Queensland
Cancer Council South Australia
Cancer Council Australian Capital Territory
Cancer Council Tasmania
The Fertility Society of Australia and New Zealand (FSANZ)
Look Better Feel Good (LBFG)
Ovarian Cancer Australia

and included gynaecological cancer types, information, and the target population. The limit of three pages was determined through the need to balance the high volume of results and the high likelihood of finding all relevant resources due to the specificity of the search.

2.2 | Eligibility criteria and screening

Materials were eligible for inclusion if they contained information related to the prevention, diagnosis, treatment, or survivorship of gynaecological cancer patients, and were intended for adult Aboriginal and Torres Strait Islander patients, caregivers, or community. Materials were required to be freely available to the public via web searches and at least one version needed to be in English language for assessment purposes. Webpages, brochures, posters, flyers, fact sheets, and videos were considered. Books, podcasts, news articles, journal articles, and advertised and sponsored links (unless they also appeared in the search results) were excluded. In addition, materials that were focused on reporting statistics (e.g., reports on incidence, mortality and survival rates of gynaecological cancers) or compiled already existing materials (e.g., websites that hosted a collection of links to cancer resources for Aboriginal and Torres Strait Islander people) were excluded. No time limit was applied. If a resource covered multiple cancer types, only the information relevant to a gynaecological cancer was assessed. Duplicate materials were excluded, however similar materials in different format modes (e.g., brochure and poster formats) were all included as they may have different levels of understandability, actionability, and readability.

MK and TB independently assessed 10 resources against the eligibility criteria, discussed application of the eligibility criteria, and came to a consensus. Following this, MK assessed the remaining resources independently for inclusion with TB adjudicating any resources where eligibility was not clear.

2.3 | Data extraction and assessment

Information extracted from the resources included the authors, type of resource, type of cancer focus, cancer care continuum stage (prevention, diagnosis, treatment, and/or survivorship), and target audience. Resources were assessed for: *understandability* using the Patient Education Materials Assessment Tool (PEMAT); *readability* using Flesch Reading Ease (FRE) and the Simplified Measure of Gobbledygook (SMOG), and *cultural relevance* using criteria previously developed for this purpose.[28] An assessment of the quality of treatment information was planned, however as only three resources reported treatment information and each had an insufficient amount of text for meaningful analysis, this assessment was not conducted.

2.3.1 | Understandability and actionability

PEMAT was developed to assist lay people and health professionals in assessing the understandability and actionability of health literacy resources.[29] Understandability was defined as whether an individual can comprehend key messages of resources. Actionability was defined as an individual's awareness of what processes can be implemented based on the presented information. There are 17 items measuring understandability and 7 items measuring actionability for printable materials (PEMAT-P, e.g., webpages or brochures) 13 items measuring understandability, and 4 items measuring actionability for audio–visual materials (PEMAT-A/V, e.g., videos). Resources were scored 1, 'agree', 0 'disagree', or non-applicable. An understandability score and actionability score were calculated for each resource by dividing the total points by the total possible points, presented as a percentage score, with higher scores indicating a more understandable or actionable resource.[29] A score of 70% or higher indicated an understandable or actionable resource. Initially, MK and TB separately assessed five resources using the PEMAT tool. Discrepancies between scores were discussed and calibrated. MK then independently assessed the remaining resources.

2.3.2 | Cultural appropriateness

To the best of our knowledge, no validated tool currently exists to assess the cultural appropriateness or relevance of health promotion resources for Aboriginal and Torres Strait Islander peoples. Given the absence of a measure, Diaz et al.[28] with the guidance of Aboriginal and Torres Strait Islander researchers, devised several criteria to assess the cultural relevance of resources for Aboriginal and Torres Strait Islander people (see Figure 1). TB and three other Aboriginal members of the First Nations Cancer and Wellbeing Research Program at the University of Queensland assessed each of the resources against these criteria. Assessors reviewed one resource collectively to ensure consistency in assessment, then reviewed the remaining resources independently. Scores were collated and the assessors

FIGURE 1 Cultural relevance assessment items from Diaz et al. (2023).

1. Does the resource include visual aids (photographs, animations, infographics, and charts) that depict or contain information about Aboriginal and Torres Strait Islander people?
2. Does the resource include data about Aboriginal and Torres Strait Islander people?
3. Does the resource include Aboriginal and Torres Strait Islander design/artwork?
4. Does the resource provide evidence of leadership, involvement, and/or governance by Aboriginal and Torres Strait Islander people, communities, and/or organisations?
5. Is the resource available in Aboriginal and Torres Strait Islander languages or is there a translation service available?
6. Is the language used strengths-based and respectful to Aboriginal and Torres Strait Islander people?
7. Does the resource include a contact (phone number, e-mail, and website) for further support and information specifically for Aboriginal and Torres Strait Islander people?

discussed each item where two or more assessors disagreed until a consensus was reached. A score of one indicated the criteria had been met and a score of zero indicated the criteria had not been met. The assessments were summed to provide a cultural inclusivity total out of a possible 7. Because the tool has not been broadly validated, the assessment was used as a general indication of cultural inclusivity.

2.3.3 | Readability

Readability of resources was assessed by the FRE Formula and the SMOG tools. FRE uses average sentence length and average number of syllables per word to calculate a reading score ranging 0–100, where higher scores indicate easier reading material. Specifically, 0–29 is 'very confusing, 30–49 is 'difficult', 50–59 is 'fairly difficult', 60–69 is 'standard', 70–79 is 'fairly easy', 80–89 is 'easy', and 90–100 is 'very easy'.[30] Scores of 70 and above were considered to be accessible reading level.[30]

SMOG is based on the number of polysyllabic words in the text and provides the years of schooling an individual requires to understand the text (in grade levels).[31] While no national Australian guidelines for health literacy readability exist, an eighth-grade reading level is commonly used as an acceptable reading level[32]; therefore a SMOG score of 8 or below was deemed readable.

FRE and SMOG scores were generated by copying and pasting the resource text into an online readability calculator.[33] Resources in audio-visual format were not assessed for readability. MK completed all readability assessments.

2.3.4 | Assessment for changes in policy

In July 2023, resources retrieved in the initial search that reported information relevant to cervical screening or human papillomavirus (HPV) vaccination were assessed to check if they had been updated in line with new clinical guidelines.

3 | RESULTS

In total, we identified 16 gynaecological cancer-related health literacy resources for Aboriginal and Torres Strait Islander consumers, families, and caregivers. Resource characteristics and assessment results are provided in Table 3. The resource types included 1 flip chart, 2 posters, 3 webpages, 3 videos, 4 brochures, and 3 information sheets. While flip charts are usually aimed at health care professionals, the identified flip chart was consumer-focused and thus included. The resources were predominately focused on cervical screening and/or HPV vaccination ($n = 14$) with one resource each on cancer of the uterus and ovarian cancer. While HPV vaccination is generally administered to children of school age, these resources were included in the assessment because the target audience was parents and/or caregivers of Aboriginal and Torres Strait Islander youth. Most resources covered prevention of gynaecological cancer ($n = 14$, all relating to prevention of cervical cancer through screening and vaccination), with fewer on diagnosis, treatment, or survivorship of gynaecological cancers.

3.1 | Understandability and actionability

The average understandability of the resources was 71% (SD = 13.97, median = 73, and range from 40%–93%). Ten resources (63%) had an understandability score greater than or equal to 70%; five resources (31%) scored greater than 80%. Many resources performed poorly on item 12, 'The material provides a summary' and item 15, 'Material uses visual aids to make content more easily understood'.

The average actionability score for the resources was 76% (SD = 18.41, median = 80, and range from 40%–100%). Eight resources (50%) had an actionability score greater than or equal to 70%; of these, 5 (31%) scored between 80 and 89% and 3 (19%) scored between 90% and 100%. Two videos and one brochure scored 100% on actionability. It is important to note that videos were only scored against 4 items whereas print materials were assessed against 6. Furthermore, PEMAT item 24 'the material provides simple

TABLE 3 Resource characteristics and assessment.

No.	Resource	Source	Resource type	Cancer type	Cancer care continuum				PEMAT		Readability	
					Prevention	Diagnosis	Treatment	Survivorship	Understandability (%)	Actionability (%)	FRE	SMOG
1	Cervical cancer: you can prevent cervical cancer[34]	Cancer Australia	Brochure	Cervical	X				40	60	Standard	<8
2	Aboriginal and Torres Strait Islander Cancer Information—Cervical cancer[35]	Cancer Council	Information Sheet	Cervical		X	X	X	73	83	Fairly easy	<8
3	Aboriginal and Torres Strait Islander Cancer Information—Cancer of the Uterus[36]	Cancer Council	Information Sheet	Cancer of the uterus		X	X	X	60	67	Standard	<8
4	Early detection and screening for Aboriginal and Torres Strait Islander people[37]	Cancer Council	Webpage	Cervical	X				80	80	Standard	>8
5	Help keep our mob HPV-free (brochure)[38]	Cancer Council Victoria	Brochure	HPV vaccination (cervical cancer)	X				87	80	Standard	<8
6	Help keep our mob HPV-free (poster)[39]	Cancer Council Victoria	Poster	HPV vaccination (Cervical cancer)	X				75	80	Fairly easy	<8
7	Sistas, Get Checked art show: raising awareness of cervical screening[40]	Cancer Council Victoria	Webpage	Cervical	X				53	60	Standard	<8
8	Ovarian Cancer: Symptoms, Diagnosis and Treatment[41]	CRAICCHS	Webpage	Ovarian	X	X	X		73	60	Fairly difficult	>8

TABLE 3 (Continued)

No.	Resource	Source	Resource type	Cancer type	Cancer care continuum				PEMAT		Readability	
					Prevention	Diagnosis	Treatment	Survivorship	Understandability (%)	Actionability (%)	FRE	SMOG
9	A new and better test for women—Aboriginal and Torres Strait Islander (brochure)[42]	Department of Health	Brochure	Cervical	X				60	60	Fairly easy	<8
10	Self-collection factsheet[43]	Department of Health	Information Sheet	Cervical	X				86	40	Fairly easy	<8
11	A new and better test for women—Aboriginal and Torres Strait Islander (poster)[44]	Department of Health	Poster	Cervical	X				60	60	Fairly easy	<8
12	A guide to understanding your test results[45]	Department of Health	Brochure	Cervical	X				73	100	Fairly easy	<8
13	Women's business-cervical screening[46]	VACCHO, Cancer Council	Flipchart	Cervical screening and HPV vaccination	X				93	80	Standard	<8
14	Get checked, you Mob[47]	Cancer Council Victoria	Video	Cervical	X				85	100	N/A	N/A
15	Have a Pap test every 2 years—it could save your life[48]	Cancer Institute NSW	Video	Cervical	X				67	100	N/A	N/A
16	Your guide to cervical screening for Aboriginal women[49]	Cancer Institute NSW	Video	Cervical	X				75	100	N/A	N/A

Abbreviations: CRAICCHS, Cherbourg Regional Aboriginal & Islander Community Controlled Health Service; HPV: human papillomavirus; FRE, Flesch Reading Ease; SMOG, Simplified Measure of Gobbledygook; VACCHO, Victorian Aboriginal Community Controlled Health Organisation.

instructions or examples of how to perform calculations' and PEMAT item 25 'the materials explain how to use the charts, graphs, tables, or diagrams to take action' were applicable to very few resources (0/16 and 3/16, respectively), further reducing the assessable criteria.

3.2 | Cultural appropriateness

Results of the cultural appropriateness assessment are presented in Table 4. The average number of criteria met for cultural appropriateness was 4 of a possible 7 (SD = 1.46, median = 4, range from 1 to 6). All resources met at least one criterion for cultural appropriateness. No resources met all criteria, however, most used strengths-based and respectful language. Most resources also included visual aids and artwork or design elements relevant to Aboriginal and Torres Strait Islander people. Very few provided resources in Aboriginal and Torres Strait Islander languages or provided evidence of Aboriginal and Torres Strait Islander leadership, governance, or involvement in designing the resource.

3.3 | Readability

Readability assessments were conducted on 13 of the 16 resources (the remaining 3 were videos and therefore not eligible for readability assessment). The average FRE score was 68, equivalent to a 'standard' reading level. Scores ranged from 59.6–76.9. Six resources each were rated to be 'fairly easy' or 'standard', with a further 1 resource rated as 'fairly difficult'. Almost all resources had SMOG reading level ratings of eighth grade or lower ($n = 11$; 85%) with scores ranging from 6 to 8.4.

3.4 | Changes in policy

In July 2022, changes to the National Cervical Screening Program in Australia saw self-collection become a universal option for all women. Previously self-collection was only available to a specific group of eligible women.[50] Furthermore, from February 2023 the National Immunisation Program schedule for the HPV vaccine changed to a single dose in line with advice from the Australian Technical Group on Immunisation and the World Health Organisation Strategic Advisory Group of Experts.[51] Accordingly, in July 2023, the resources found in the original search and accompanying websites were checked to ensure that the resources reporting information relevant to cervical screening or HPV vaccination had either been updated or removed. Results are presented in Table 5. Of the applicable resources, most had either updated the resource or created new resources with updated screening or vaccination information. However, in some cases, the older, outdated information was still readily accessible.

4 | DISCUSSION

This study assessed the availability, understandability, actionability, readability, and cultural relevance of gynaecological cancer-related

TABLE 4 Cultural relevance assessment.

	Cultural relevance assessment items Diaz et al. (2023)*							
No.*	1. Visual aids	2. Data	3. Design/ artwork	4. Leadership	5. Language/ translation	6. Strengths-based	7. Contact for support	Total
1	✓	✓	✓	-	-	✓	-	4
2	-	-	-	✓	-	-	-	1
3	-	-	-	✓	-	-	-	1
4	-	✓	-	-	-	✓	✓	3
5	✓	✓	✓	-	-	✓	-	4
6	✓	✓	✓	-	-	✓	-	4
7	✓	✓	✓	-	-	✓	✓	5
8	-	✓	-	✓	-	✓	✓	4
9	✓	✓	✓	-	✓	✓	-	5
10	✓	-	✓	-	✓	✓	-	4
11	✓	-	✓	-	✓	✓	-	4
12	✓	-	✓	-	✓	✓	-	4
13	✓	✓	✓	✓	-	✓	✓	6
14	✓	✓	✓	-	-	-	-	3
15	✓	✓	✓	✓	-	✓	✓	6
16	✓	✓	✓	✓	-	✓	✓	6

Note: *The resource numbers (No.) correspond to the resource numbers in Table 3, which contains the full title and reference. **The cultural relevance assessment items have been abbreviated. The full item descriptions can be found in Figure 1.

TABLE 5 Details of resource updates with changes in cervical cancer screening and HPV vaccination policy.

Resource	Updated?	Comment
Cervical cancer: you can prevent cervical cancer[34]	No	No new resource. Original resource found in search not updated and still accessible, but notes on the landing page indicate the contents may be outdated
Early detection and screening for Aboriginal and Torres Strait Islander people[37]	Yes	Updated details of eligibility for self-collection
Help keep our mob HPV free (brochure)[38]	Yes	Updated details of change to one-dose schedule
Help keep our mob HPV-free (poster)[39]	Yes	Updated details of change to one-dose schedule
Sistas, Get Checked art show: raising awareness of cervical screening[40]	Yes	Added detail about self-collection
A new and better test for women—Aboriginal and Torres Strait Islander (brochure)[42] Self-collection factsheet[43] A new and better test for women—Aboriginal and Torres Strait Islander (poster)[44] A guide to understanding your test results[45]	Yes	New resource sheets with updated details of availability of self-collection provided on website. Out-dated resources found in original search no longer accessible
Women's business-cervical screening[46]	Yes	Resource found in search no longer accessible via original link. A similar-looking brochure is available via website search and provides updated details of self-collection
Get checked, you Mob[47]	No	Video not updated and is still accessible. No new videos specifically about cervical screening available on organisation's YouTube channel
Have a Pap test every 2 years—it could save your life[48]	No	Not updated and still accessible. No new videos specifically about cervical screening available on organisation's YouTube channel
Your guide to cervical screening for Aboriginal women[49]	No	

health literacy resources for Aboriginal and Torres Strait Islander consumers, families, and caregivers. Sixteen resources were identified for the target population, and on average, these resources were understandable, actionable, and readable. Overall, the resources had a high level of cultural relevance to Aboriginal and Torres Strait Islander peoples.

We identified a distinct lack of variety in resources across the cancer care continuum and by cancer type. Almost all resources related to the prevention of cervical cancer. Cervical cancer is highly preventable through HPV vaccination, cervical screening, and timely treatment, garnering a strong focus on the elimination of this cancer in Australia.[52] As such, it is unsurprising that many resources focused on this cancer, and it is encouraging that these resources were accessible and culturally relevant for Aboriginal and Torres Strait Islander people. Importantly, it appeared that many of these resources had either been updated or replaced with new resources aligned with current information about cervical screening and HPV vaccination policy. However, there was a dearth of resources for other gynaecological cancers with only 1 resource each for ovarian and uterine cancer, and no resources for other gynaecological cancer types (i.e., vulvar, and fallopian cancers). This is despite uterine cancer incidence increasing among Aboriginal and Torres Strait Islander women,[53] indicating a greater need for information. The sole focus on prevention neglects a range of supportive care needs related to diagnosis, treatment, and survivorship across a variety of gynaecological cancers.

Furthermore, there was a dearth of information about gynaecological cancers as a cancer group, such as the signs, symptoms, prevention, and treatment topics that may be common to all gynaecological cancers. We found a handbook about gynaecological cancers designed for Aboriginal and Torres Strait Islander health workers and practitioners[54] in a general internet search, however, it is unlikely that patients, caregivers, or community members would use this handbook as it is nearly 100 pages in length. A concise resource with a united focus across gynaecological cancers designed for community members may provide more wholistic and accessible health information.

While there were exceptions, the understandability and actionability of the resources were moderately high. However, the resources consistently scored low in items related to the use of visual aids to support comprehension and whether a summary was provided for understandability. This was consistent with other literature assessing web-based education materials in diverse populations.[55] The importance of visual aids in Aboriginal and Torres Strait Islander health settings is discussed further below.

The highest scoring resources consisted of a flipchart and a video which were able to achieve the visual items most other resources could not. Additionally, these resources were longer than the others which mostly consisted of one-paged information sheets. This may have allowed for a clearer conveyed health message by having space to incorporate both words and visuals.[55]

Overall, the reading level of most of the resources aligned with recommendations of a Grade 8 reading level[32] and most were rated to be of 'standard' or 'fairly easy' reading level. These findings illustrated better readability compared to other web-based gynaecological cancer education materials globally[56,57] and nationally[58] and were favourable compared to similar studies assessing web-based and cancer patient education materials for diverse populations.[59,60] As the majority of resources in this study were produced by peak cancer bodies in Australia, these resources may have adhered to plain English recommendations for health materials. Although there is no national data about Aboriginal and Torres Strait Islander people's health

literacy levels, they are likely to be at risk of lower health literacy[13] and may require further tailored health resources, coupled with culturally appropriate presentation formats (e.g., videos or images accompanied by verbal descriptions) to ensure broad levels of readability and comprehension among community in a range of geographic settings.

Culturally appropriate resources are a priority in Aboriginal and Torres Strait Islander gynaecological cancer research and practice[16,26,61] and impact the comprehension of key health messages of the assessed resources.[62–64] Although this audit was focused on resources for Aboriginal and Torres Strait Islander women, none of the resources received a full score for the cultural inclusivity assessment. Notably, few resources provided evidence of Aboriginal and Torres Strait Islander leadership, involvement, and/or governance in designing or creating the resources, although many included Aboriginal and Torres Strait Islander artwork and/or images in the resources. Even fewer provided resources in Aboriginal languages. Furthermore, it is important to consider cultural preferences for the format and medium of health resources. Several studies developing health education materials with Aboriginal and Torres Strait Islander communities suggest the use of culturally relevant imagery accompanied by plain language is vital to health message comprehension.[62–64] Although not formally assessed in this study, during the cultural appropriateness assessment, discussion between assessors revealed a preference for information in a video format accompanied by simple language and imagery. Even though the resources generally performed well in terms of actionability, understandability, and readability, further resources with more visual aids and culturally relevant imagery may be required to facilitate use in Aboriginal and Torres Strait Islander communities. To ensure optimal uptake and comprehension among the community for whom the resource is designed, it is critical that resource creators consult with the target community and design it from the ground up. Ideally, these resources emerge out of a process of co-design.[64]

The cultural appropriateness assessment tool used in this study was not a standardised tool and thus this assessment provides an indication of cultural relevance only. However, the tool was developed with the guidance of Aboriginal researchers and implemented successfully in a previous health resource audit.[28] Currently there are no available tools to assess the cultural appropriateness of health literacy resources; future research should urgently seek to fill this gap.

4.1 | Limitations

This study has several limitations. Firstly, we did not include resources likely to be used by consumers such as social media posts, podcasts, and news articles. These are easily accessible by the general public but are more difficult to systematically collect and assess. This is problematic because resources likely to be in regular use by community members were not captured in this audit. Furthermore, social media resources may be less likely to be evidence-based or fact-checked by credible sources. However, the search included many major organisations involved in cancer control in Australia and therefore provides a comprehensive and rigorous search of credible and trustworthy resources. Second, as mentioned previously, the tool used to conduct the cultural appropriateness assessment has not been validated, so it can only provide an indication of cultural relevance only. Finally, it is important to acknowledge that while these resources were assessed using widely agreed academic standards (PEMAT, FRE, and SMOG), Aboriginal and Torres Strait Islander women who would be the users of the resources did not provide their assessment on these indices. Future research assessing health promotion resources should include users in the process to ensure applicability of the findings in practical settings.

5 | CONCLUSION

Several key strategy frameworks identify the need for increased awareness of gynaecological cancer,[65] the promotion of cancer health literacy[10] and for culturally and linguistically appropriate resources.[66] Together these indicate a need for high-quality and accessible health information regarding gynaecological cancers to contribute to closing the disparities in health outcomes for Aboriginal and Torres Strait Islander women. This study has identified a need for a wider range of resources to fill significant gaps in resources, relating to specific cancer types (such as uterine, ovarian vulvar, and fallopian cancers) and stages of the cancer care continuum (such as diagnosis, treatment, and survivorship). Resources encapsulating common issues shared across gynaecological cancers may also be required. The content and form of these resources should be developed by and with Aboriginal and Torres Strait Islander women, patients, caregivers, and families following the principles of co-design[67] and may require an increased focus on visual aids and videos to ensure uptake. Appropriate resources may support improvements in health literacy and in turn, contribute to improved gynaecological cancer care and outcomes for Aboriginal and Torres Strait Islander people.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon request.

ETHICS STATEMENT

Ethics approval was not required for this study.

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