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Can targeting information on cancer-related psychosocial services by male gender and rurality improve attitude to service use in this difficult-to-engage population?

Running head: Targeting psychosocial service information by male gender and rurality

Nathan J. Harrison^{1,2,3}, Kate M. Gunn^{2,4,5,6}, Carlene J. Wilson^{6,7,8}

¹School of Psychology, University of Adelaide

²Freemasons Foundation Centre for Men's Health, Adelaide Medical School, University of Adelaide

³National Centre for Education and Training on Addiction, Flinders University

⁴UniSA Cancer Research Institute, University of South Australia

⁵Department of Rural Health, University of South Australia

⁶College of Medicine and Public Health, Flinders University

⁷School of Psychology and Public Health, La Trobe University

⁸Olivia Newton John Cancer Wellness and Research Centre, Austin Health

Abstract

Objective

Rural men affected by cancer are difficult to engage in psychosocial support services. This exploratory study tested whether exposure to printed brochures describing services, distinguished by a focus on *rural men* affected by cancer, resulted in more positive help-seeking attitudes than exposure to material focused on rural location only or generic cancer support material.

Methods

Targeted versions of a South Australian Cancer Council service brochure were developed to enhance cultural appropriateness, consistent with the Elaboration Likelihood Model. Rural men affected by cancer were recruited via supportive accommodation and randomized to receive one of the three brochures. The primary outcome was positive attitude to help-seeking at post-test (between 1-2 days). Negative attitudes to help-seeking, intention to seek help, perceived isolation, and service use were secondary outcomes; perceived information relevance at immediate post-test, was also measured.

Results

Analysis ($N=114$) indicated no detectable group differences (rurality/male gender, $n=33$; rurality, $n=41$; control, $n=40$) on primary or secondary outcome measures ($p>.05$).

Participants' existing service use was high, due to the recruitment methods. Support service information was primarily sourced from other people (e.g., friends/family, 22.22%; medical professionals, 27.27%).

Conclusions

Existing service use rates suggest that ceiling effects obscured any potential benefit from demographic targeting of materials. Further research should consider building understanding

about the acceptability of targeting techniques in this population, replication with materials designed with greater consumer input, and employ samples recruited outside a support service.

Registration: Australian New Zealand Clinical Trials Registry (ACTRN12617000565347)

1 BACKGROUND

The importance of accessing psychosocial support for psychological and practical difficulties among those affected by cancer is well-established. Nonetheless, a large number of people affected by cancer, who could potentially benefit, do not access such care.¹ People with cancer who live in rural locations are less likely to use supportive care services than their urban counterparts², even though they face additional stressors such as relocation for treatment, and reviews of studies in developed countries show they have poorer psychosocial³ and survival⁴ outcomes than those in non-rural areas.

Men affected by cancer, whether patients or carers, are particularly reluctant to seek psychosocial help.⁵ For example, male cancer patients report lower rates of professional psychological service use⁶, and men represented just 20% of callers to a South Australian cancer helpline from 2009-2013.⁷ Much has been written about the physical isolation and travel-related barriers to care that rural people affected by cancer face. Additionally, attitudinal and knowledge-related barriers to service use are prevalent in the rural population.² For example, rural people affected by cancer have reported insufficient information about relevant psychosocial services, being unsure about whether or not such services are likely to be of benefit, and fearing that accessing them may be stigmatizing.⁸ This suggests that novel approaches to improving knowledge of relevant, accessible services and normalizing their use are needed in order to improve uptake of evidence-based supportive care by rural men affected by cancer.

Normalization of any behavior requires enhancing perceived relevance and acceptability, and minimizing perceived barriers.^{8,9} According to the Elaboration Likelihood Model¹⁰, it is crucial messages are perceived as relevant to the target in order to motivate behavior change. Written material is of benefit to people with cancer and their partners,¹¹

although engagement is varied. Targeting information so that it is both rural-^{8,12} and male-specific¹³⁻¹⁵ may improve engagement by improving perceived salience.

Targeted materials are those designed to engage specific population sub-groups with messages that resonate; they are generally more effective than generic alternatives.¹⁶ Strategies to achieve cultural appropriateness for particular groups have been executed via targeted materials¹⁶ because use has been found to increase perceived personal relevance. The efficacy of targeting based upon sociodemographic variables, including gender and cultural background, has been demonstrated in a range of contexts.^{13,15} For example, Hammer and Vogel¹⁵ compared the efficacy of a male-targeted brochure on depression with a gender-neutral brochure and a control. The male-specific version produced a greater reduction in self-stigma, and was evaluated favorably by men. Similarly, an evaluation of print resources targeted to the healthcare needs of rural women during treatment indicated that participants who received the targeted resource reported improved emotional venting and feelings of being emotionally supported.¹² To date, no research has evaluated the impact of targeted cancer support material for rural men, even though rural men affected by cancer identify strongly with their rural residence status.¹⁷

Previous research confirms that information targeted to location of residence can help overcome barriers and increase confidence in, and willingness to access, psychosocial services.¹⁸ Targeting that is even more closely matched to the person affected by cancer, such as by gender, may have even greater success although there is little research on the potential additive contribution of targeting on multiple variables.

The goal of this exploratory study was to test whether novel written material about supportive cancer care services that targeted information on the basis of *rural residence alone*, or *rural residence and male gender together*, improved help-seeking attitudes more

than exposure to a non-targeted, generic brochure.

The study design tested for possible incremental increases in efficacy associated with targeting on two demographic characteristics versus one. Based on previous research outlined above, it was hypothesized that **men receiving rural-specific or rural- and gender-specific support service information would have more positive attitudes to psychosocial help-seeking after cancer than participants receiving non-targeted material**. It was also hypothesized that **targeting on two demographic influences would have additive benefit for attitude to help-seeking after cancer**. Finally, we hypothesized that **the targeted materials would be perceived as more personally relevant, and that negative attitudes to help-seeking and perceived isolation would decrease more after exposure compared to those exposed to the non-targeted material**.¹⁶

2 METHODS

2.1 Participants and study setting

Eligible participants were: adult males (18+ years); receiving active treatment or follow-up care for cancer, or a carer of a person diagnosed with cancer; living outside a major metropolitan city in Australia¹⁹; able to read and write in English, and give informed consent, and not psychologically or physically incapable of participating. All participants were current or recent guests at a supported accommodation facility in a major Australian city.

2.2 Procedure

A within-between groups randomized control trial was undertaken. Time was the within-group factor (baseline–Time 1; immediate post-test–Time 2; endpoint post-test, between 1-2 days after post-test 1–Time 3), and Extent of Targeting (none; one targeted demographic variable; two targeted demographic variables) the between-group factor.

Recruitment occurred via post and in-person at the accommodation. Postal invitations

were sent to a database of male guests who departed in a three-month period prior to the study and were considered potentially eligible (e.g., excluding corporate guests).²⁰ Information sheets were distributed by social workers and accommodation staff in existing in-person communication. Posters were displayed and informal discussions with the researchers took place at regular morning teas for guests.⁸ Allocation of invitees was sequential (1:1:1), with a block size of six.

Participants were asked to complete all Time 1 (baseline) measures and read the brochure, then instructed to answer the Time 2 immediate post-test measures (information relevance and demographic items only). Participants completed Time 3 (endpoint post-test) measures between 1-2 days later. Participants also described the ways in which they had become aware of existing support service information at Time 1 and Time 3. The control brochure was removed from accommodation ‘welcome packs’ and displays during the study; participants were asked to not share their brochure version with others. One reminder letter was sent 20 days later to invitees who had not responded to the postal invitation.

2.2.1 Outcomes

The primary outcome was positive attitudes to seeking help. Secondary outcomes were negative attitudes to seeking help, intention to seek help, perceived isolation, and service use; perceived information relevance at immediate post-test was an additional secondary outcome.

2.2.2 Education sources

Participants received one of three versions of a “Cancer? We can help”²¹ brochure in a sealed envelope. The 12-page generic brochure detailed 13 support services (e.g., telephone helpline, counseling, financial services) and was in current distribution. Modifications of the two targeted brochures incorporated strategies to optimize cultural appropriateness for the

targeted population^{16,22} (Supplementary Table S1), and key features of previous targeted materials for men (e.g., stereotypically masculine testimonial images^{13,15,23}, language^{14,24}, reference groups²⁵, and population-specific cancer incidence statistics¹⁶), to optimize reader interest and establish credibility.²² All brochures were comparable in length, format, and readability.²⁷

2.3 Outcome measures

All study measures were collected at Time 1 (baseline; refer Figure 1) and at Time 3 (endpoint post-test), between 1-2 days later, with the exception of information relevance and demographic items, which were only collected at Time 2 (immediate post-test).

2.3.1 Primary outcome

The five-item Positive Attitudes to Help Seeking subscale of the Attitudes to Seeking Help after Cancer scale (ASHaC)¹ measured attitude to service use. All items of the ASHaC were scored on a five-point scale (1=“strongly disagree” to 5=“strongly agree”). Higher mean scores indicated more positive attitude to seeking psychosocial help. The subscale demonstrated good internal consistency in the current study at Time 1 (baseline; $\alpha=.82$) and at Time 3 (endpoint post-test; $\alpha=.78$), and acceptable test-retest reliability (.74) over the two time points.

2.3.2 Secondary outcomes

The ten-item Negative Attitudes to Help Seeking and three-item Behavioral Intention to Seek Help subscales of the ASHaC were also used. Higher scores on the former subscale indicated more negative attitude to seeking psychosocial help after cancer; for the latter, higher scores indicated a greater likelihood of intention to seek help, and the response format was modified to measure intentions within the next month. We included each subscale of the measure because higher scores on positive attitudes and lower scores on negative attitudes

have each previously been associated with intention to use services, but the positive and negative attitude subscales have demonstrated a weak bivariate correlation.¹ Moreover, behavioral intention mediates the relationship between positive attitudes to help-seeking and actual support service use.²⁸ Each subscale demonstrated good internal consistency at Time 1 (negative attitudes, $\alpha=.85$; behavioral intention, $\alpha=.79$) and at Time 3 (negative attitudes, $\alpha=.84$; behavioral intention, $\alpha=.83$). Test-retest reliability was good for the negative attitudes subscale (.80), but lower for the behavioral intention subscale (.68).

Participants also listed lifetime psychosocial service use on a binary yes/no scale, with seventeen specified categories plus an “Other—please describe” option.

A Perceived Isolation measure was developed for the current study, based on literature review. Items measured perceived disconnectedness²⁹ and isolation from general sources of support. There was no specific reference to personal social network, to ensure the construct had scope to capture perceived access to professional psychosocial support services (described in the brochure), as well as lay social support. One reverse-scored item (“I feel surrounded by the support I need”) was used on the four-item measure (“I feel isolated”; “I feel alone”; “I feel like I do not have support”). Responses were on a 5-point scale (1=“strongly disagree” to 5=“strongly agree”), with higher scores indicating greater isolation. The measure was deemed acceptable by pilot participants and demonstrated good internal consistency ($\alpha=.83$ at Time 1, $\alpha=.81$ at Time 3). However, test-retest reliability was low (.62).

The Perceived Information Relevancy subscale of the Website User Satisfaction measure (three items, one reverse-scored; five-point scale from 1=“strongly disagree” to 5=“strongly agree”)³⁰ was modified for use with brochures. This assessed perceived personal relevance at Time 2 only. Higher mean subscale scores indicated greater perceived relevance. Its internal consistency was acceptable in the present study ($\alpha=.74$).

2.4 Statistical analyses

The sample size calculation used a medium effect of $f=.30$, which conservatively aligned with medium-to-large effects of previous male-targeted brochures on between-group attitudinal outcomes.¹⁵ Assuming power=.80, $\alpha=.05$, and within-individual correlation $>.50$, a total sample size of $n=84$ was required over the two time points.

Main outcome analyses were conducted via a group (for three brochure conditions: rural-male, rural, generic) by time (considered as a categorical variable at the two main outcome assessment points: Times 1 and 3) intention-to-treat design. Although post-test data were missing for 21.05% of participants, data were missing at random so, consistent with expectation-maximization principles, maximum likelihood estimation was used. To address incomplete item-level data in written questionnaires, means were calculated provided that $\geq 80\%$ of relevant items were completed.

Group, time and group-by-time interactions were tested with linear mixed models for each outcome variable. Group was included as a fixed effect, and time as a categorical variable; unadjusted estimates of intervention (group) effects were examined with the 'lme4'³¹ and 'afex'³² packages in R. All other analyses used IBM SPSS Statistics 26. The general linear model was used to compare group differences on perceived information relevance (assessed at Time 2 only). An alpha level of .05 was employed throughout.

Open-ended data on support service information source was analyzed with content analysis.³³ Inductive categories of related information sources were developed by reading and re-reading the open-ended data by the first author. Data relating to each category was then counted.

2.5 Ethics approval

The study was reviewed by the Subcommittee for Human Research Ethics, School of

Psychology, University of Adelaide (approval 15/56), and all procedures were in accordance with the 1964 Helsinki declaration and its later amendments.

3 RESULTS

The sample comprised 114 participants (81 men diagnosed with cancer, 24 male carers of a person with cancer; 9 unknown/incomplete). Demographic and cancer-related characteristics are presented in Table 1. Approximately half of participants reported residence in an outer regional area (54.13%), with the rest residing in inner regional and remote/very remote areas.

[TABLE 1 HERE]

Initial recruitment occurred from June 15-September 29, 2015. Follow-up questionnaires were completed 2.24 days ($SD=4.66$) later, on average. A total of 364 invitations were sent to potential participants (314 via post and 50 in-person). The initial postal response rate from eligible participants was 29.18%; the in-person response rate (e.g., during informal events at accommodation facilities) could not be calculated. Of the 114 participants that returned the initial survey, 90 completed a follow-up survey (attrition rate=21.05%). The study flow chart is presented in Figure 1.

[FIGURE 1 HERE]

Table 2 presents mean outcome scores for each group.

[TABLE 2 HERE]

3.1 Hypothesis 1: Exposure to targeted information about supportive services will lead to greater improvements in attitudes to help-seeking than exposure to generic information.

Across the two time points, the main effect of group ($F(1,133.02)=0.62, p=.68$) and the group by time interaction ($F(1,85.62)=1.59, p=.21$) were not significant; however, the main effect of time approached significance, $F(1,85.02)=3.48, p=.07$. At follow-up, within-group positive attitude was estimated to decrease slightly (-0.29, scored on a 5-point scale; $SE=0.15$). There was no statistically significant difference between the three groups (rural-male, rural, and generic) on positive attitudes to help-seeking.

3.2 Hypothesis 2: Targeted messages will be rated as of higher relevance than non-targeted messages

The results of a one-way analysis of variance test of perceived relevance compared between groups was non-significant ($F(2,105)=1.47, p=.24, \omega^2=.01$).

3.3 Hypothesis 3: Targeted messages will lead to greater decreases in perceived isolation and negative attitudes to help-seeking, and improved intention to use services than non-targeted messages

No significant differences were observed over time ($F(1,89.72)=0.98, p=.33$) or between groups ($F(1,147.16)=0.29, p=.59$) for the perceived isolation outcome. No significant differences were observed over time ($F(1,85.26)=0.09, p=.76$) or between groups ($F(1,127.14)=0.22, p=.64$) for the negative attitudes outcome, or over time ($F(1,87.62)=0.11, p=.74$) or between groups ($F(1,136.17)=2.32, p=.13$) for the behavioral intentions outcome.

Analyses for the outcome variables above were subsequently adjusted for patient/carer status and time since initial diagnosis, and produced the same patterns of

significance (i.e., $p > .05$).

3.4 Support service use and existing sources of support service information

At baseline, participants had used an average of 3.12 ($SD=2.40$) support services (Supplementary Table S2). Use of supported transport (75.68%), information (58.56%), and counseling services (27.52%), in addition to accessing medical practitioners for support services (36.79%), were most common. Consistent with previous results, there were no significant differences observed over time ($F(1,89.70)=0.02, p=.89$) or between groups ($F(1,112.72)=0.09, p=.76$) for service use.

At Time 1, the most commonly reported sources of information about support services were medical doctors or other medical professionals (27.27%; valid $n=99$; Supplementary Table S3), followed by “other people” (friends, family, and others; 22.22%). Only twelve participants (12.12%) reported that brochures and other printed information had previously informed them of services at baseline.

4 DISCUSSION

The exploratory study tested the provision of brochures about cancer support services targeted by rurality, or rurality and male gender, on attitude to supportive care service use. To the best of our knowledge this is the first study to assess the comparative efficacy of targeted versus non-targeted information provision about support services on attitudes to help-seeking and intention in a sample of rural men affected by cancer— a group known to be unlikely to access psychosocial support.

The hypotheses that participants receiving the targeted brochures would display greater improvements in attitudes to help-seeking, perceived isolation and intention to use services, were not supported. The related hypothesis that men receiving the targeted brochures would also perceive the information as more personally relevant was also not

supported; no statistically significant differences were detected between groups. The pattern of results suggests that this brief, minimal, paper-based intervention may not have sufficiently challenged the negative psychosocial help-seeking stereotypes endorsed by rural men.

Explanation for the findings may rest with the potential rejection of written health information provision for help-seeking by men. The current study did not assess extent of engagement with the intervention and control materials; this may have been low regardless of the extent of targeting. Key evidence³⁴ suggests that men are generally less likely to seek health information, including cancer-related information. For example, they are only half as likely as women to be described as “information seekers”.³⁵ Additionally, research suggests that men appear content to source information directly from health providers and are generally happier than women with the extent to which their information needs are met by these providers.³⁶ Participants in the current study most frequently identified medical professionals as a source of existing support service information.

Difficulty in engaging men may be exacerbated when the services advocated appear to focus on psychological or emotional support rather than physical assistance. Existing research suggests a link between traditionally-defined masculinity and a rejection of supports, and particularly “support groups”.²⁴ Rural men are also particularly reluctant to seek help from mental health services, compared to physical health services.³⁷ Together this suggests that something other than simple targeting of written material is required to engage men with cancer-related information, particularly that focused on “supportive care”.

4.1 Study limitations

Other factors may also have impacted the study’s capacity to achieve attitudinal change. Participants were recruited through the supportive accommodation they were attending, and therefore had already used at least one, broadly defined, psychosocial service.

Moreover, baseline service use was higher than reported in similar populations elsewhere.³⁸ Sampling bias associated with the study's relatively low participation rate may also mean that participants with existing positive attitudes to supportive care were over-represented. Those who have accessed a supportive service, including accommodation, are likely to hold more positive attitudes to help-seeking and help-accepting. Participants who already use supportive accommodation may also have their informational and practical needs met during their stay, and so are unlikely to require additional information on other sources of support.^{8,20} Consequently, increasing awareness of services is likely to have been particularly difficult in this participant pool. Replication of the study in a sample recruited from the community or via a treatment facility (rather than via an organization that provides supportive care) would be useful.

4.2 Clinical implications

Further research is required to better understand influences on supportive care attitudes among rural men and how to best provide messages to encourage help-seeking. This includes understanding perceptions of brochure information, and influences on actual engagement with the material. Fixed presentation of the targeted materials online would ensure adherence to the current experimental procedure, and allow exposure and engagement to be objectively quantified.¹⁵ Although time constraints made it impractical in the present study, involving consumers directly in the development of targeted brochures would also strengthen future studies.

4.3 Conclusions

This study has been the first to test the degree to which making cancer support service information targeted to male and rural populations impacts help-seeking. The study used theory-based targeting techniques to develop novel informational materials. Given the great

disparities in health outcomes experienced by rural populations³⁹⁻⁴⁰, the success of other information targeting interventions^{12-13,15-16,18} and the limitations of the present study, further research into the power of targeting based on rurality and gender is required.

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Conflict of interest statement

None.

Data availability statement

The data are not publicly available due to privacy or ethical restrictions.

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Table 1

Participant-reported demographic characteristics, and cancer-related characteristics of either themselves or the person for whom they care

Demographic		
<i>Age, years (n=111)</i>	<i>M(SD)</i> 68.13(10.78)	range 20-86
<i>Years of life lived in rural area (n=108)</i>	<i>M(SD)</i> 54.89(20.46)	range 8-86
<i>Level of remoteness (n=109)[†]</i>		
Inner regional		3 (2.75%)
Outer regional		59 (54.13%)
Remote		31 (28.44%)
Very remote		16 (14.68%)
<i>Marital status (n=109)</i>		
Married/living with a partner		87 (79.82%)
Separated/divorced		10 (9.17%)
Widowed		7 (6.42%)
Single/never married		5 (4.59%)
<i>Level of completed education (n=103)</i>		
Primary school or less		19 (18.45%)
High school		39 (37.86%)
Technical certificate/diploma		32 (31.07%)
University qualification		13 (12.62%)
<i>Country of birth (n=111)</i>		
Australia		101 (91.00%)
Britain/Ireland		8 (7.21%)
Other		2 (1.80%)
<i>Employment status (n=106)</i>		
Working (full-time/part-time/casual)		16 (15.09%)
On leave		1 (0.94%)
Not working		10 (9.43%)
Retired		79 (74.53%)
Cancer-related		
<i>Time since initial diagnosis, months (n=101)</i>	<i>M(SD)</i> 34.35(58.06)	range 0-424
<i>Participant-reported cancer site[‡] (n=108)</i>		
Breast		10 (9.26%)
Colorectal		15 (13.88%)
Lung		13 (12.04%)
Lymphoma		13 (12.04%)
Melanoma		8 (7.41%)
Prostate		35 (32.41%)
Other		41 (37.96%)
Unknown		3 (2.78%)
<i>Participant-reported current cancer status (n=104)</i>		
No activity		47 (45.19%)
Recently diagnosed		11 (10.58%)
Recurrence		15 (14.42%)

Metastases	7 (6.73%)
Unknown	24 (23.08%)

Note. Cancer-related characteristics were self-reported by patients, and by carers on behalf of the person for whom they care. *n* differed between variables, reflecting missing self-report demographic data. *SD*=standard deviation.

†Remoteness was calculated from participant-reported postcodes. For postcodes with multiple classifications (*n*=21), the more accessible status was assumed.

‡Reported *n*>108, as some participants reported multiple sites.

Table 2

Descriptive overview of outcome measures by group

Outcome measure	Brochure condition								
	Control (n=40)			Rural (n=41)			Rural-Male (n=33)		
	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>
Positive attitudes									
T1	2.65	0.79	38	2.61	0.81	39	2.50	0.83	32
T3	2.53	0.60	30	2.47	0.74	30	2.40	0.73	23
Information relevance ratings									
T2	4.16	0.60	38	4.35	0.50	38	4.12	0.72	32
Perceived isolation									
T1	2.17	0.83	39	2.04	0.78	39	2.06	0.86	32
T3	2.10	0.71	32	2.05	0.74	32	2.10	0.86	24
Negative attitudes									
T1	2.76	0.71	38	2.89	0.74	39	2.68	0.72	33
T3	2.76	0.60	31	2.76	0.71	30	2.63	0.70	23
Behavioral intention to seek help									
T1	2.10	0.83	39	2.15	0.84	39	1.81	0.62	33
T3	2.23	0.68	31	2.13	0.91	30	1.88	0.63	23
Service use									
T1	2.88	1.92	40	3.39	3.13	41	3.12	1.82	33
T3	2.45	1.46	33	3.58	3.04	33	2.50	1.72	24

Note. Possible range for each outcome 1-5, except service use (count variable, theoretical range 0-17). *M*=unadjusted mean. *SD*=standard deviation. T1=Time 1, T2=Time 2, T3=Time 3.

Figure 1

Participant flow.

ASHaC=Attitudes to Seeking Help after Cancer scale.¹ WUS=Website User Satisfaction measure.³⁰

