Psychologic Predictors of Cancer Information Avoidance among Older Adults: The Role of Cancer Fear and Fatalism

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Abstract

Little is known about the correlates of cancer information avoidance and whether people with negative feelings and beliefs about cancer are more likely to avoid cancer information, allowing such thoughts and feelings to persist unchallenged. Using the Extended Parallel Processing Model as a theoretical guide, we tested the hypothesis that cancer fear and fatalism would predict cancer information avoidance but that part of this effect would be mediated via cancer-specific threat and efficacy beliefs. A community sample of older adults, ages 50 to 70 years (n = 1,442), completed a postal questionnaire that included the Powe Fatalism Inventory and the Champion Cancer Fear scale along with other measures of cancer-specific beliefs and demographic variables. Higher levels of cancer fear were positively associated with higher levels of cancer information avoidance, and part of this relationship was mediated via perceived cancer severity. The relationship between cancer fatalism and cancer information avoidance was partly mediated by severity and response-efficacy beliefs. This research shows that people with negative views about cancer are more likely to avoid cancer information. This means people with higher levels of cancer fear and fatalism are less likely to learn about positive developments made in the field of cancer control, allowing such negative feelings and views to continue. Research needs to focus on how to get positive messages about improvements in cancer prevention and control through to people who are fearful of and fatalistic about the disease.

Introduction

Cancer is the second biggest cause of premature death in the western world, but recent estimates suggest that its incidence could be halved through lifestyle changes, such as maintaining a healthy body weight (1). An important first step in promoting lifestyle change is raising awareness of the need for health behavior changes and research has begun to explore patterns of cancer information seeking in the general population. For example, the Health Information National Trends Survey, set up by the National Cancer Institute, is a national telephone survey designed to identify the ways in which people seek cancer information and the factors that hinder or facilitate this process (2). The first Health Information National Trends Survey, carried out in 2002 to 2003, showed that respondents who reported ever having searched for cancer information were more likely to be female, ages <65 years, non-Hispanic, have a usual source of health care, and have had a prior cancer diagnosis, a family history of cancer, higher education, and higher income (3). Actively seeking out cancer information within the past year was found to be associated with higher cancer knowledge, adopting healthy lifestyle behaviors and going for cancer screening (4).

The focus of this type of research has been on understanding cancer information needs and sociodemographic predictors of cancer information seeking. Relatively little research has examined the issue of information avoidance and, in particular, whether people most in need of learning about cancer control are more likely to avoid cancer information.

One group for whom positive cancer control messages are particularly important are people who are especially fearful of or fatalistic about cancer. Cancer fatalism is the belief that death is inevitable following a diagnosis of cancer, and both cancer fear and fatalism have been associated with poorer adherence to screening recommendations in older adults (5, 6). (Although see ref. 7 for a review of the role of cancer worry in breast screening uptake). Cancer fatalism has also been linked with lower levels of exercise and lower fruit and vegetable intake (8) and cancer fear with delay in seeking help for suspicious symptoms (9, 10). Successfully communicating advances in cancer control ought, in theory, to reduce fear and fatalism and thereby promote uptake of cancer control behaviors. However, if people who are high on fear and fatalism avoid cancer information, they will remain unaware of improvements in cancer control, and fatalistic beliefs that cancer cannot be prevented or cured will persist unchallenged.

A variety of explanations for seeking health information have been put forward, for example, that it increases knowledge, confirms/disconfirms beliefs, adds meaning (provides explanations for things), and helps differentiate options to facilitate decision-making (11, 12). Information avoidance, however, has received less attention (13). Some researchers have framed it as a personality...
trait [e.g., Rokeach’s “closed” mind (14) or Miller’s “blunting” response to threatening information (15)]. Others have viewed it as more context specific, such as the “selective exposure hypothesis,” which proposes that people seek information that is consistent with their knowledge, beliefs, and attitudes and avoid exposure to conflicting information (e.g., ref. 16). One motive for this behavior is the reduction in feelings of discomfort or dissonance that may arise from having conflicting beliefs (16). However, although there is evidence that people show a preference for reading information that is consistent with their views, the evidence that contradictory evidence is explicitly avoided is weaker and less consistent (17). Consequently, it has been suggested that this theory serves as a better model for understanding information approach than information avoidance.

Fear, fatalism, and efficacy beliefs have been identified as potential determinants of information avoidance. In their review of information approach/avoidance, Case et al. (13) state that “Avoiding information is closely linked to feelings of anxiety and fear as well as to other cognitive and emotional variables like perceptions of treatment efficacy, self-efficacy, and locus of control.” Tendencies towards fatalism and avoidance can “short-circuit any information seeking at all” (ref. 13, p. 359). Similarly, in his discussion of his Comprehensive Model of Information Seeking, Johnson (18) states that “…it does not make much sense to learn more about things over which they have no control, so the powerless tend not to seek information…neither do members of fatalistic cultures” (p. 73), but little empirical support is offered for this claim. In addition, although the Comprehensive Model of Information Seeking outlines the factors that may be involved in information avoidance, the model is very general and does not easily generate specific hypotheses.

An alternative model for considering information avoidance is Witte’s Extended Parallel Processing Model (EPPM), which offers an account of the conditions under which “fear appeals” succeed or fail in motivating people to make behavior changes. The EPPM proposes that the success of health promotion messages depends on the balance between threat perceptions, efficacy beliefs, and fear. According to the EPPM, threat appraisals (severity and susceptibility) determine whether people feel fear. Fear then motivates people to evaluate whether the recommended behavioral response is likely to reduce danger from the health threat (efficacy appraisal). If people believe they can control the danger (have high efficacy beliefs), they will engage in danger control and perform the recommended behavior needed to reduce the threat. If people do not believe they can control the danger they focus on minimizing feelings of fear. Fear control can result in “defensive avoidance” and “inattentiveness to the communication,” whereby people may “flip a television channel or skip through a magazine article…to avoid having to think” about the threat in question (19). This process may occur immediately after exposure to the health promotion information or some time later.

According to this model, information avoidance would be most likely to occur when threat beliefs were high and efficacy beliefs low. In addition, the EPPM would predict that fear would have both direct and indirect effects on avoidance, the latter being via the influence of fear on threat perceptions (20). Although fatalism does not feature in the EPPM, it is conceptually similar to efficacy beliefs. As a result, fatalism could be predicted to have indirect effects on avoidance via its association with efficacy beliefs.

The aim of the present study was to examine the interrelationship between cancer fear, cancer fatalism, and cancer information avoidance among older adults. Older adults were selected because they are invited for breast and colorectal cancer screening offered through the National Health Service and are sent information leaflets about cancer along with their invitation to obtain cancer screening. Understanding factors that may lead to the avoidance of cancer information among this age group is therefore of particular interest given the issue of cancer prevention and detection is directly communicated to this group.

We predicted that information avoidance would be associated with high threat beliefs and low efficacy beliefs. In addition, we predicted that cancer fear would have both direct and indirect effects on information avoidance.

Materials and Methods

Participants. Participants were a community sample of older adults, ages 50 to 70 years, identified from the lists of three general practitioner practices in north London, United Kingdom. This age group was selected because they are the people currently invited to attend for cancer screening in the United Kingdom and who are sent appointments along with cancer information leaflets.

Exclusion criteria for the initial search through general practitioner lists were unable to speak English, cancer diagnosis in the last 6 months, on mental health register, and experiencing cognitive decline (e.g., dementia). Patient lists were then checked by the general practitioners to further exclude any people who they felt would be distressed by receiving the questionnaire. At general practitioner practices 1 and 2, all patients ages 50 to 70 years were considered, whereas at general practitioner practice 3 only a proportion of patients ages 50 to 70 years were considered to reduce the burden of checking the list.

People were randomized to receive one of two questionnaires by household, so partners in the same household received the same questionnaire type. The questionnaires varied as to whether the cancer questions were asked before or after questions about mood, in case answering questions about cancer affected people’s mood and vice versa. Participants were invited to complete the questionnaire with a covering letter from their general practitioner. People were asked to return the questionnaire blank if they did not want to be sent a reminder questionnaire. If people had not returned a questionnaire (either blank or completed) after 3 to 4 weeks, a second questionnaire was mailed.

Measures

Demographic Characteristics. Gender and date of birth were both supplied as part of general practitioner lists, and date of birth along with age at the date of sending out the questionnaire was used to calculate people’s age.
at the time the questionnaire was posted. The remaining measures were obtained via the postal survey.

Socioeconomic deprivation was measured using three items: educational qualifications (some versus none) home ownership (yes versus no) and car ownership (yes versus no). A point was given for no educational qualifications, lack of home, and lack of car ownership, giving a maximum deprivation score of 3 and a minimum of 0.

Personal and Family History of Cancer. Previous cancer diagnosis was assessed with the question “Have you ever had cancer?” Response options were “No,” “Yes,” or “Not sure.” Although only people who responded “No” were included in this particular study.

Participants were asked to indicate whether any of their blood relatives had had cancer [mother, father, mother’s mother, mother’s father, father’s mother, father’s father, son(s), daughter(s), sister(s), brother(s), other (please state)]. Response options were “Yes,” “No,” or “Do not know or N/A.”

Cancer Fear and Fatalism. Fear of cancer was measured using the Breast Cancer Fear Questionnaire developed by Champion et al. (21) with the wording altered to ask about cancer in general. Participants were asked: “How do you feel when you think about cancer?” and requested to endorse eight statements (e.g., “The thought of cancer scares me” and “When I think about cancer, I get upset”) using the response options: “strongly disagree,” “disagree,” “not sure,” “agree,” and “strongly agree.” These were scored on a scale of 1 to 5, with 1 indicating strong disagreement and 5 indicating strong agreement. The scale had good levels of internal reliability with a Cronbach’s $\alpha = 0.91$.

Cancer fatalism was measured using the Powe Fatalism Index (22), which contains 15 statements related broadly to the potential to prevent cancer (e.g., “If someone gets cancer, it was meant to be”), the potential for cancer cure (e.g., “If someone has cancer, it is already too late to get treated for it”), and concerns about cancer check-ups (e.g., “Getting checked for cancer makes people scared that they may really have cancer”). Response options were Yes or No. Cronbach’s $\alpha = 0.83$.

Cancer Susceptibility, Severity, Response-Efficacy, and Self-Efficacy Beliefs. Susceptibility to cancer was assessed using three items from the Risk Behavior Diagnosis Scale (23), again amended to ask about cancer in general. “It is likely that I will get cancer,” “I am at risk of getting cancer,” and “It is possible that I will get cancer.” It had good levels of internal reliability (Cronbach’s $\alpha = 0.76$). Cancer severity was assessing using an eight-item scale (24). For example, “I am certain that if I were to develop cancer it would limit my social life” and “If I develop cancer, it could almost certainly cause my death.” This scale had good levels of internal reliability (Cronbach’s $\alpha = 0.81$).

Response-efficacy and self-efficacy items were developed specifically for this study to measure the behaviors covered in Cancer Research UK’s “Reduce the Risk” campaign, which aimed to raised awareness “of the avoidable risks of cancer and the importance of screening and early detection.” The wording of the items was based on the phrasing used in the Risk Behavior Diagnosis Scale and covered eight behaviors: maintaining a healthy body weight, not smoking/stopping smoking, eating five portions of fruit and vegetables a day, taking regular exercise, reducing alcohol intake, reducing sun exposure, checking their body for signs of cancer, and going for cancer screening (e.g., Response-efficacy: “I believe maintaining a healthy body weight is effective in preventing some types of cancer” and Self-efficacy: “Maintaining a health body weight in order to decrease my chances of getting some types of cancer is easy for me to do”). Internal reliability was good for the response-efficacy items (Cronbach’s $\alpha = 0.73$) although lower for the self-efficacy items (Cronbach’s $\alpha = 0.61$).

Response options for all the above scale were “strongly disagree,” “disagree,” “not sure,” “agree,” and “strongly agree” and were scored on a scale of 1 to 5, with 1 indicating strong disagreement and 5 indicating strong agreement.

Information Avoidance. Information avoidance was assessed using a 5-item measure developed by Orbell et al. (24). “I prefer not to think about cancer,” “I avoid reading things about cancer,” “I avoid watching TV programs about cancer,” “I avoid listening to radio programs about cancer,” and “I do not want any more information about cancer.” It had good levels of internal reliability (Cronbach’s $\alpha = 0.86$). Response options were “strongly disagree,” “disagree,” “not sure,” “agree,” and “strongly agree” and were scored on a scale of 1 to 5, with 1 indicating strong disagreement and 5 indicating strong agreement.

Data Analysis. Linear regression was used to assess univariate and multivariate predictors of information avoidance and to assess whether defensive avoidance/protective motivation was a significant predictor. Direct and indirect pathways between fear, fatalism, and information avoidance were assessed using partial correlations and path analyses (using multiple regression).

Results

Response Rate. General practitioner lists of people ages 50 to 70 years were generated following the application of the formal exclusion criteria listed above. General practitioners then checked their individual patient lists to further exclude any individuals who they believed would be unduly distressed by receiving the questionnaire. In total, 5% of participants were excluded from general practitioner practice 1 and 0.6% from general practitioner practice 2. Information about exclusion rates was not available from general practitioner practice 3.

Following exclusions, 4,008 questionnaires were sent out, of which 310 were returned undelivered due to incorrect addresses (7.7%). Of the 3,698 apparently delivered, 1,852 were returned completed giving an overall response rate of 50.1%. This response rate is very similar to that of other postal surveys conducted both inside and outside of London (25, 26). 1,352 were not returned (36.6%), 479 (13%) were returned blank, and 15 (0.4%) were returned completed, but by a person who was not the person the questionnaire had been sent to (the age range and/or gender were not as specified on the general practitioner lists); this group was counted as nonrespondents.
Feared and fatalistic cancer information avoidance was associated with higher levels of response-efficacy and self-efficacy beliefs. When all these variables were entered into the model together, the deprivation effect became nonsignificant, but associations between fear, fatalism, severity, response-efficacy, and self-efficacy with information avoidance remained (see Table 1).

### Partial Correlations

<table>
<thead>
<tr>
<th>Variable</th>
<th>Univariate</th>
<th>Multivariate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demographic variables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.034</td>
<td>0.038</td>
</tr>
<tr>
<td>Gender</td>
<td>−0.049</td>
<td>−0.054*</td>
</tr>
<tr>
<td>Deprivation</td>
<td>0.141</td>
<td>0.029</td>
</tr>
<tr>
<td>Cancer history</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family history of cancer (any)</td>
<td>−0.045</td>
<td>−0.008</td>
</tr>
<tr>
<td>Fear and fatalism</td>
<td>0.236</td>
<td>0.174*</td>
</tr>
<tr>
<td>Fatalism</td>
<td>0.253</td>
<td>0.137*</td>
</tr>
<tr>
<td>Cancer threat beliefs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Susceptibility</td>
<td>0.009</td>
<td>−0.082*</td>
</tr>
<tr>
<td>Severity</td>
<td>0.226</td>
<td>0.117*</td>
</tr>
<tr>
<td>Cancer efficacy beliefs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response-efficacy</td>
<td>−0.197*</td>
<td>−0.099*</td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>−0.196*</td>
<td>−0.094*</td>
</tr>
</tbody>
</table>

*Significant in the multivariate but not the univariate analysis.

### Prevalence of Cancer-Specific Emotions and Beliefs

The cancer information avoidance scale was normally distributed with an average score of 2.61 (SD = 0.85). Over a quarter (26.7%) had a score above 3 (above the midpoint of the scale), indicating that they avoided cancer information. Susceptibility (mean = 2.98; SD = 0.69), severity (mean = 3.06; SD = 0.62), and cancer fear (mean = 2.71; SD = 0.82) were also all normally distributed.

Response-efficacy and self-efficacy scores were positively skewed, with averages above the center point of the scale (response-efficacy: mean = 3.98; SD = 0.46; self-efficacy: mean = 3.77; SD = 0.52), whereas cancer fatalism was negatively skewed, with an average score of 4.09 (SD = 3.29) on a scale of 1 to 15.

### Predictors of Cancer Information Avoidance

Cancer information avoidance was associated with higher levels of deprivation, higher cancer fear and cancer fatalism, higher cancer severity, and lower levels of response-efficacy and self-efficacy beliefs. When all these variables were entered into the model together, the deprivation effect became nonsignificant, but associations between fear, fatalism, severity, response-efficacy, and self-efficacy with information avoidance remained (see Table 1).

### Balance of Threat and Efficacy Beliefs

To test the hypothesis that information avoidance was more likely to occur when threat beliefs exceeded efficacy beliefs, the method outlined by Witte et al. (23) to determine the "critical point" at which people would engage in defensive avoidance rather than protection motivation was followed: susceptibility and severity were added together to comprise a “threat” score and response-efficacy and self-efficacy were added together to comprise an “efficacy” score. The scores were then transformed and threat was subtracted from efficacy. People with scores above zero (positive values) were categorized as showing protective motivation, whereas people with scores of zero or lower (negative values) were predicted to show higher levels of information avoidance. This method resulted in 51.5% of participants being labeled as having a “defensive motivation” whereas 48.5% were labeled as having a protective motivation.

People categorized as showing defensive motivation had higher levels of self-reported avoidance of cancer information compared with people categorized as showing a protective motivation ($t_{1,448} = 7.48; P < 0.001$). Defensive motivation significantly predicted higher levels of information avoidance in both univariate and multivariate analyses ($β = −0.193; P < 0.001$ and $β = −0.097; P < 0.001$, respectively). As predicted, cancer fear also showed a direct association with information avoidance as did cancer fatalism in the multivariate model ($β = 0.183; P < 0.001$ and $β = 0.169; P < 0.001$, respectively; see Table 2).

### Partial Correlations

Partial correlations were computed between fear, fatalism, susceptibility, severity, response-efficacy, self-efficacy, and information avoidance, partialing out the effects of age, gender, deprivation, and family history (see Table 3). Information avoidance was significantly correlated with fear, fatalism, severity, response-efficacy, and self-efficacy but not...
with susceptibility. Cancer fear was significantly correlated with susceptibility, severity, and self-efficacy, and cancer fatalism was significantly correlated with susceptibility, severity, self-efficacy, and response-efficacy. Potential mediators of the relationship between fear and information avoidance were therefore severity and self-efficacy (because these two variables were significantly correlated with both fear and information avoidance) (28). Potential mediators of the relationship between fatalism and information avoidance were severity, response-efficacy, and self-efficacy.

Regression Analysis

Regression Analysis. Bivariate correlations for all 11 variables were examined (not controlling for demographic variables). As none exceeded 0.70, multicollinearity was not regarded as a problem (27), so all variables were considered for inclusion in the model.

Mediational pathways between cancer fear and information avoidance and fatalism and cancer avoidance were explored using regression analysis. We tested the hypothesis that some of the associations between fear and information avoidance and fatalism and information avoidance were via cancer-specific threat and efficacy beliefs (susceptibility, severity, response-efficacy, and self-efficacy). In addition, because fear and fatalism were significantly correlated with one another, we also examined whether the pathways between fear/fatalism and information avoidance were unique with both fear and fatalism in the model together.

The univariate association between fear and information avoidance was significant ($\beta = 0.236; P < 0.001$) and this remained the case controlling for the background variables age, gender, deprivation, and family history ($\beta = 0.240; P < 0.001$). The two mediators being considered were severity and self-efficacy. Both variables were entered individually to see whether there was a significant reduction in the association between fear and avoidance when they were entered compared with the reference $\beta$ (the association between fear and information avoidance controlling for age, gender, deprivation, and family history) labeled "Reference $\beta 1$" in Table 4.

Both variables resulted in a significant reduction in the association between fear and avoidance (severity: $z = 4.42; P < 0.001$; self-efficacy: $z = 2.49; P = 0.013$) when entered individually. However, once fatalism was added into the model, only the addition of severity resulted in a significant reduction in the association between cancer fear and avoidance (severity: $z = 3.47; P < 0.001$; self-efficacy: $z = 1.83; P = 0.067$) compared with the reference $\beta$ ($\beta 2$).

Severity still resulted in a significant reduction in the association between cancer fear and avoidance when self-efficacy was also added into the model ($z = 3.07; P = 0.002$). Hence, severity made an independent contribution to understanding the association between fear and information avoidance when age, gender, deprivation, family history, fatalism, and self-efficacy were included in the model.

The univariate association between fatalism and information avoidance was significant ($\beta = 0.253; P < 0.001$) and this remained the case controlling for the background variables age, gender, deprivation, and family history ($\beta = 0.230; P < 0.001$; see Table 5). Severity, response-efficacy, and self-efficacy met initial criteria for mediating between fatalism and information avoidance. Each of these three variables was entered individually to see whether they reduced the association between fatalism and avoidance. All three variables

### Table 3. Partial correlations between path model variables controlling for age, gender, deprivation, and family history

<table>
<thead>
<tr>
<th></th>
<th>Fear</th>
<th>Fatalism</th>
<th>Susceptibility</th>
<th>Severity</th>
<th>Response-efficacy</th>
<th>Self-efficacy</th>
<th>Information avoidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fear</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fatalism</td>
<td>0.192*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Susceptibility</td>
<td>0.256*</td>
<td>0.091*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severity</td>
<td>0.479*</td>
<td>0.246*</td>
<td>0.266*</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response-efficacy</td>
<td>0.023</td>
<td>-0.212*</td>
<td>-0.032</td>
<td>-0.029</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Self-efficacy</td>
<td>-0.085*</td>
<td>-0.128*</td>
<td>-0.136*</td>
<td>-0.117*</td>
<td>0.519*</td>
<td>-0.171*</td>
<td>-0.179*</td>
</tr>
<tr>
<td>Information avoidance</td>
<td>0.239*</td>
<td>0.217*</td>
<td>0.022</td>
<td>0.224*</td>
<td>-0.171*</td>
<td>-0.179*</td>
<td>1.00</td>
</tr>
</tbody>
</table>

* $P < 0.001$. 

### Table 4. Mediators of the relationship between cancer fear and cancer information avoidance

<table>
<thead>
<tr>
<th></th>
<th>$\beta$</th>
<th>$\Delta \beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univariate</td>
<td>0.236</td>
<td></td>
</tr>
<tr>
<td>Reference $\beta 1$ (controlling for age, gender, deprivation, and family history)</td>
<td>0.240</td>
<td></td>
</tr>
<tr>
<td>Addition of severity</td>
<td>0.171</td>
<td>$z = 4.42; P &lt; 0.001$</td>
</tr>
<tr>
<td>Addition of self-efficacy</td>
<td>0.226</td>
<td>$z = 2.49; P = 0.013$</td>
</tr>
<tr>
<td>Reference $\beta 2$ (controlling for age, gender, deprivation, and family history, and fatalism)</td>
<td>0.205</td>
<td></td>
</tr>
<tr>
<td>Addition of severity</td>
<td>0.156</td>
<td>$z = 3.47; P = 0.001$</td>
</tr>
<tr>
<td>Addition of self-efficacy</td>
<td>0.197</td>
<td>$z = 1.83; P = 0.067$</td>
</tr>
<tr>
<td>Reference $\beta 3$ (controlling for age, gender, deprivation, family history, fatalism, and self-efficacy)</td>
<td>0.197</td>
<td></td>
</tr>
<tr>
<td>Addition of severity</td>
<td>0.152</td>
<td>$z = 3.07; P = 0.002$</td>
</tr>
</tbody>
</table>
reduced the association between fatalism and avoidance when entered individually and when cancer fear was added. However, when the three potential mediators were entered alongside each other (in addition to the background variables and cancer fear), only severity and response-efficacy significantly reduced the association between fatalism and avoidance ($z = 2.89; P = 0.004$ and $z = 4.12; P < 0.001$). Significant direct pathways between fear and avoidance and fatalism and avoidance remained. The final model is shown in Fig. 1.

**Discussion**

In line with our predictions, we found that cancer fear had both direct and indirect effects on information avoidance. People who scored higher on cancer fear were more likely to be fatalistic about the disease, believed themselves to be a higher risk of getting it, believed cancer to be more severe, and considered themselves less able to do anything to prevent cancer (were lower on self-efficacy); however, path analysis showed that the indirect effect of cancer fear on cancer information avoidance was only via its effect on severity beliefs. Hence, the influence of cancer fear on threat perceptions (specifically severity) explained part of the relationship between cancer fear and information avoidance. Efficacy beliefs did not appear to play a role.

Although no specific predictions were made about the role of fatalism, we also found that it had direct and indirect effects on information avoidance. People who scored higher on cancer fatalism rated themselves as more likely to get cancer, rated it as a more severe disease, and had lower response-efficacy and self-efficacy beliefs. Path analysis showed that the indirect effects of fatalism on cancer information avoidance were via its effect on severity and response-efficacy. However, given the conceptual overlap between these three variables, these associations are unsurprising: cancer fatalism refers to pessimistic beliefs about the potential to prevent and to cure cancer, and both severity and response-efficacy beliefs cover very similar content.

In line with predictions based on the EPPM (23, 29), we also found that cancer information avoidance was significantly higher among people whose threat beliefs exceeded their efficacy beliefs. The EPPM suggests that this is because high levels of threat in the absence of high efficacy beliefs lead to a state of fear control (or

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**Table 5. Mediators of the relationship between cancer fatalism and cancer information avoidance**

<table>
<thead>
<tr>
<th></th>
<th>$\beta$</th>
<th>$\Delta \beta$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Univariate</td>
<td>0.253</td>
<td>—</td>
</tr>
<tr>
<td>Reference $\beta 1$ (controlling for age, gender, deprivation, and family history)</td>
<td>0.220</td>
<td>—</td>
</tr>
<tr>
<td>Addition of severity</td>
<td>0.183</td>
<td>$z = 5.06; P &lt; 0.001$</td>
</tr>
<tr>
<td>Addition of response-efficacy</td>
<td>0.201</td>
<td>$z = 3.50; P &lt; 0.001$</td>
</tr>
<tr>
<td>Addition of self-efficacy</td>
<td>0.209</td>
<td>$z = 3.46; P &lt; 0.001$</td>
</tr>
<tr>
<td>Reference $\beta 2$ (controlling for age, gender, deprivation, family history, and fear)</td>
<td>0.189</td>
<td>—</td>
</tr>
<tr>
<td>Addition of severity</td>
<td>0.170</td>
<td>$z = 3.05; P = 0.002$</td>
</tr>
<tr>
<td>Addition of self-efficacy</td>
<td>0.171</td>
<td>$z = 3.08; P = 0.002$</td>
</tr>
<tr>
<td>Addition of response-efficacy</td>
<td>0.154</td>
<td>$z = 4.12; P &lt; 0.001$</td>
</tr>
<tr>
<td>Reference $\beta 3$ (controlling for age, gender, deprivation, family history, fear, self-efficacy, and response-efficacy)</td>
<td>0.154</td>
<td>—</td>
</tr>
<tr>
<td>Addition of severity</td>
<td>0.137</td>
<td>$z = 2.89; P = 0.004$</td>
</tr>
<tr>
<td>Reference $\beta 4$ (controlling for age, gender, deprivation, family history, fear, severity, and response-efficacy)</td>
<td>0.136</td>
<td>—</td>
</tr>
<tr>
<td>Addition of self-efficacy</td>
<td>0.137</td>
<td>$z = -0.48; NS$</td>
</tr>
<tr>
<td>Reference $\beta 5$ (controlling for age, gender, deprivation, family history, fear, severity, and self-efficacy)</td>
<td>0.155</td>
<td>—</td>
</tr>
<tr>
<td>Addition of response-efficacy</td>
<td>0.137</td>
<td>$z = 2.62; P = 0.009$</td>
</tr>
</tbody>
</table>

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**Figure 1.** Path model with $\beta$ weights showing the indirect and direct pathways between cancer fear, cancer fatalism, and information avoidance (controlling for age, gender, deprivation, and family history of cancer).
“defensive avoidance”), whereby people focus on reducing feelings of fear rather than trying to minimize their chances of getting or dying from the threat in question (in this case, cancer). This appears to be driven by pessimistic beliefs that there is little that can be done to avert the health threat itself. Hence, cancer information appears to be avoided because of the expectation that it contains bad news (that cancer is a serious health threat and cannot be controlled). However, other factors may also contribute to information avoidance.

As noted in Introduction, cancer information may also be avoided because, in the absence of plans to engage in cancer control behavior, there is no requirement to seek information to facilitate decision-making. For example, people high on fear and fatalism may have greater certainty that they do not wish to engage in any cancer control behaviors. However, although associations between high fatalism and low levels of attendance at screening appear to be reasonably robust (e.g., ref. 22), the same cannot be said for the relationship between cancer fear and attendance. A recent review of the role of cancer worry and attendance at breast cancer screening concluded that cancer worry promoted uptake of breast screening (7). Different reasons may underpin information avoidance in people high on cancer fear compared with people high on cancer fatalism, and this issue may benefit from more in-depth investigation.

The main limitation of this study lies in its design: it is cross-sectional and does not involve the direct manipulation of variables; hence, the causal order of the associations between factors such as cancer fear, perceptions of severity, and information avoidance cannot be established, although it is likely that they are mutually reinforcing. Experimental work exposing people to information and observing the effect it has on perceptions of cancer severity and cancer fear would be valuable.

A further limitation is the response rate at just over 50%. This limits conclusions that can be drawn about the prevalence of feelings and beliefs about cancer, but the effect of the response rate on the pattern of associations among variables is harder to determine. A further issue, shared method variance, may have inflated the associations between variables and this line of research may benefit from the use of objective measures of information avoidance.

A further limitation relates to the variance in demographic factors, notably age. No age-related differences in cancer information avoidance were observed in this study, but age-related differences may emerge if younger groups are also surveyed.

In summary, despite dramatic improvements in cancer prevention and control, negative views about cancer persist. Around a third of our sample of older adults agreed that they were fearful of cancer, and a fifth expressed moderate to high levels of fatalism. We also found moderate levels of cancer information avoidance with approximately a quarter agreeing that they avoided cancer information. Yet, the advances that have been made in cancer control means that the information disseminated about cancer has become increasingly positive. Within this context, the avoidance of cancer information among people high on cancer fear and fatalism will only serve to allow such negative feelings and beliefs to persist and means that the people who would benefit most from this information appear to be least likely to be exposed to it. Future research needs to explore how to engage such sectors of the population with cancer information to try and challenge the negative views held about the disease.

Disclosure of Potential Conflicts of Interest

No potential conflicts of interest were disclosed.

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Psychologic Predictors of Cancer Information Avoidance among Older Adults: The Role of Cancer Fear and Fatalism

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