

Cervical Cancer Prevention: Theory of Planned Behaviour and Associated Factors Influencing Women's Screening Intentions.

Hannah Deering

Submitted in fulfilment of the requirements of the Higher Diploma in Psychology at Dublin
Business School, School of Arts, Dublin.

Supervisor: Garry Prentice Ph.D.

March 2019

Department of Psychology

Dublin Business School

Table of Contents

Literature review	1
Introduction	1
The impact of anxiety on screening attendance	3
Age and its impact on screening attendance	4
The impact of education on screening participation	5
How past screening behaviour can impact future screening attendance	6
Application of the TPB to determine screening intentions	7
Research rationale	9
Hypotheses.....	11
Methodology	13
Participants	13
Design	14
Materials	15
Procedure	17
Ethics.....	17
Data analysis	18
Results	19
Demographic details of the sample.....	19
Reliability statistics.....	21

Recent smear test attendance and attitude	22
Recent smear test attendance and anxiety.....	23
Anxiety levels and education	23
Anxiety and age	24
Attitude and education	24
Attitude and age	24
Regression analysis for the predictors of intentions	25
Discussion	27
The role of anxiety and attitude in past screening behaviour	27
The effect of education and age on women’s anxiety levels	28
Factors associated with influencing women’s screening intentions.....	29
Future implications	30
References	32
Appendices.....	37
Appendix A: Information sheet	37
Appendix B: Questionnaire- demographics.....	38
Appendix C: Questionnaire- Anxiety	38
Appendix D: Questionnaire -TPB.....	40
Appendix E: Debrief sheet	45

Declaration

‘I declare that this thesis that I have submitted to Dublin Business School for the award of HDip Psychology is the result of my own investigations, except where otherwise stated, where it is clearly acknowledged by references. Furthermore, this work has not been submitted for any other degree.’

Signed: Hannah Deering

Student Number: 10379685

Date: 22/03/2019

Acknowledgements

I would like to express my deepest gratitude to my supervisor Dr. Garry Prentice for his advice and guidance during this project. I would also like to thank Dr. Pauline Hyland for all her help throughout the year. To all my colleagues in the Coombe Women's and Infants University Hospital in the Cytology Department, thank you for putting up with me and for all your support over the past few months. Finally, thank you to my mother and my brothers for the endless cups of tea, the hot dinners and constant support over the past two years.

Abstract

Cervical cancer is the second most common female cancer in the world leading to 93 deaths every year in Ireland. Cervical Cancer can be prevented through routine screening, which involves taking a smear test from an asymptomatic woman to check for any pre-cancerous changes in the cervix. The Irish screening programme has not reached full capacity in uptake rates since it was implemented in 2008. This study looked at the factors which influence women's intentions to go for a smear test, with the aim that these could be researched further to increase screening uptake rates.

This quantitative study included a sample of $N = 282$ women of screening age i.e. between the ages of 25 – 65 years. Participants were required to fill out a google forms questionnaire which included demographic questions, anxiety (DASS) and questions from the Theory of Planned Behaviour model in order to understand which variable impacts most on screening intentions.

Of the women who participated in the study, 67% were between the ages of 25-39 years. Out of 282 women, 81% have previous history of going for smears, and these women had higher mean scores for positive attitude towards screening and had lower levels of anxiety related to cervical screening. A one-way anova revealed that high levels of anxiety associated with screening are linked to women of higher education and to women from the age group 25-39 years. The results from the regression analysis identified behavioural control ($p = .00$), attitude ($p = .00$) and recent smear history ($p = .00$) to be significant in influencing women's intentions to go for a smear in the future.

The use of the TPB model and understanding women's past screening behaviours proved to be useful in understanding the factors which are linked with greater intentions to go for smear tests in the future. By identifying the factors which influence women to participate in screening, interventions can be implemented to increase these factors in non-attenders.

Abbreviations

CSB – Care-seeking Behaviour theory

DASS - Depression Anxiety Stress Scale

DV – Dependent Variable

HBM - Health Behaviour Model

HPV -Human Papilloma Virus

IV – Independent Variable

NHS - National Health Service

PSI – Psychological Society of Ireland

TPB - Theory of Planned Behaviour

WHO - World Health Organisation

Literature Review

Introduction

Cervical screening attendance rates have not met full capacity since the introduction of the screening programme in 2008. Cervical cancer is the 2nd most common female cancer in the world (Irish Cancer Society, 2018), and accounts for 7.5% of female deaths each year (WHO, 2014b). In Ireland alone, approximately 306 new cases are reported, and 93 women lose their battle with cervical cancer each year (NCRI, 2012). The Human Papilloma Virus (HPV), is responsible for the development of 99% of all cervical diseases. HPV is transmitted through sexual contact and is the most prevalent viral infection of the reproductive tract. HPV is a transient infection, meaning it may not always lead to the development of disease as it can be cleared by the immune system without any medical intervention (WHO, 2014b).

Screening involves identifying the presence of pre-cancerous or early cancer cells. Cervical screening is not accredited for the detection of endometrial or ovarian disease. Endocervical disease can also be difficult to detect if the sample hasn't been adequately taken, however cervical check has stated that the presence of cervical screening could reduce incidence of cervical disease among Irish women by up to 80% (Cervical Check, 2018). Screening is defined by the world health organisation as a "Presumptive identification of unrecognized disease in an apparently healthy, asymptomatic population", it is not a diagnostic test and therefore there will be cases that go undiagnosed (WHO, 2018).

Since the cervical screening programme was set up in 2008, over 100,000 new cases of pre-cancerous cervical abnormalities were diagnosed, these women were treated for abnormalities which if left undetected could have developed into invasive carcinoma (see figure 1). However, the screening programme has not seen success in uptake rates which leaves many women in Ireland unscreened in the population, for this reason, it is important to

understand what factors play a role in influencing a woman to attend her next scheduled smear (Health Service Executive, 2018).

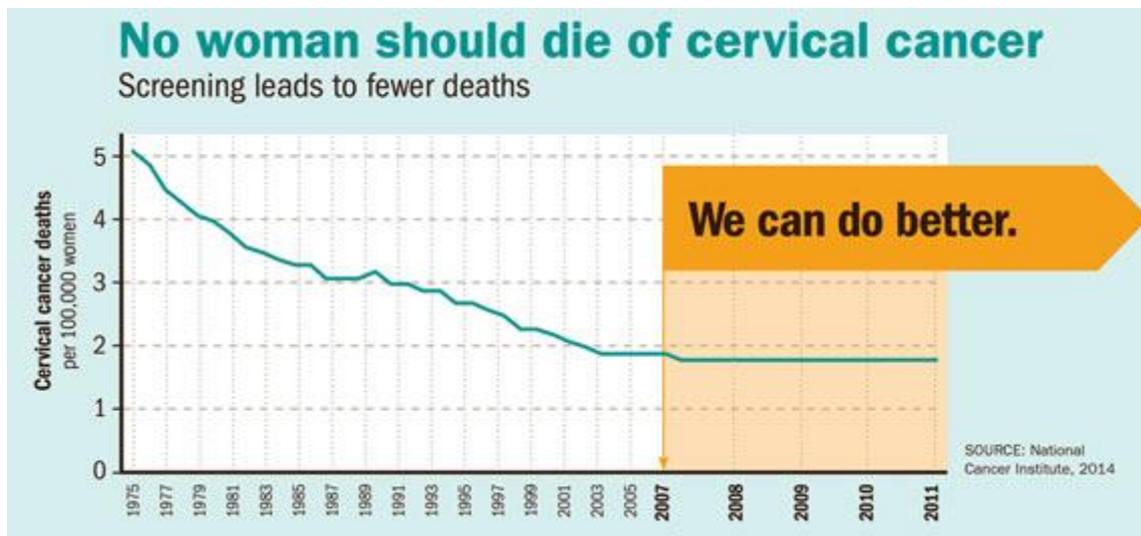


Figure 1. CDC figures on the reduction of cervical cancer globally due to cervical screening programmes (CDC, 2014).

This study aims to understand the factors that heavily influence women's intentions to take part in cervical screening. Two psychological measures were used to assess women's intentions: the anxiety model from the Depression, Anxiety, Stress Scale (DASS) and the Theory of Planned Behaviour (TPB). The TPB model is used to assess participants attitude, subjective norms, behavioural control and intentions related to cervical screening, while the anxiety measure is used to assess feelings of anxiety when going for a smear. Together with descriptive statistics: including age group, recent smear test attendance and education, the anxiety model and TPB are statistically analysed to assess what impacts on women's intentions to present for future smear tests. A total of 282 women of screening age (between the age of 25-65 years), took part in this quantitative study. Participants were divided into three different age groups, 25-39, 40-49 and 50-65, based on screening uptake rates from Cervical Checks annual report. The 2015 report showed women over the age of 25 had the highest screening uptake rate at 83%, these numbers began to drop at the age of 49 and

onwards, while women between the ages of 50-65 had the lowest screening uptake, making up 13% of all women screened in that year (Cervical Check, 2016).

The Impact of Anxiety Levels on Screening Attendance

Women may experience anxiety when attending smear test appointments for various reasons. Health anxiety, body-dysmorphia, embarrassment or post-traumatic stress disorder due to sexual violence, and even a lack of understanding could trigger anxiety. Jos Cervical Cancer Trust carried out a study on 2000 women of screening age. Their study looked at the cause of embarrassment in women and how it impacts their screening attendance. Results showed 1 in 3 women do not avail of their free smear due to feelings of embarrassment of their body or fear of the procedure. There were 20% of women who said they would prefer not to know if they had a cervical abnormality due to worry (NHS, 2018).

Researchers in Poland hypothesised that anxiety may be a reason for non-participation in cervical screening. Females with previous abnormal cytology results were recruited for this study. With a cohort of 150 women between the ages of 25 – 63 years, 49% said they worry about the outcome of their smear test results. Of the 150 participants, 29% said they worry about the smear test itself being unpleasant. Many studies have been carried out on measuring anxiety levels of women who have abnormal cytology results. Anxiety levels among women with previous abnormalities may be higher, understandably so as they fear future abnormal results (Koc et al, 2017).

A lack of communication and counselling provided to women may be a cause of increased anxiety related to cervical screening. Allen 2004 suggests that health care professionals must adjust their practices to accommodate education, communication and even counselling for

women on cervical screening. These changes to health care practices may help reduce anxiety of women availing of the cervical screening programme (Allen, 2004).

An independent t-test will use anxiety levels as an independent variable to understand the effect on past smear attendance. Anxiety levels will be used as a dependent variable in a one-way anova to assess the effect age and education has on anxiety levels. Furthermore, anxiety levels will be used in a linear regression analysis to assess its effect on women's screening intentions.

Age and its Impact on Screening Attendance

Cervical Check has an automatic recall process, in which women are recalled every three years if under the age of 45, every five years if between the age of 45 and 65, and every year if they have had a previous abnormality. A reminder letter is sent to women when their smear test is due. Understanding past behaviour is useful in determining the probability of similar behaviour occurring in the future. The women who participated in this study were asked if they had presented for their most recently scheduled smear test (Cervical Check, 2018).

The British Medical Journal published a study on the factors which influence screening participation based on age. The study on Korean women aged 15-29 and 30-39, showed predictive factors differed among the older and the younger age group. The results showed 70% of screening attendance was from women aged 30 years and over. The researcher then looked at age per year, and found that in the age group 15-29, each year of increasing age was associated with a greater likelihood to participate in screening. The researchers concluded that age-specific interventions are necessary to increase screening participation among different age groups (Chang et al, 2017).

A study published in the journal of *Health Education Behaviour* used the theory of planned behaviour to understand cervical screening among Latinas in the United States.

Women who were 21 years old or over were eligible to take part in the study. This study failed to look at problematic age groups according to yearly screening programme figures (Roncancio et al, 2015). Age difference is an important variable to consider as research shows that behaviour and personality traits differ among adult age groups. A study published in the journal of *Psychology and Aging* looked at age difference and behaviour. The study found that behaviour variability is very high in adulthood, and there are significant age differences in the amount of behaviour variability for three of the big five personality traits which suggests that variability is relevant to developmental research (Nofle & Fleeson, 2010).

As previously stated, young Irish women under the age of 40 have the highest uptake for cervical screening, however the Australian Cervical Cytology Registry found that the 40% of women under the age of 30 did not present regularly for their cervical smear, which suggest that the difference between culture and nationality are also an important variable to consider as this may effect screening uptake rates (Deeks, A., et al, 2009).

A one-way anova will look at the effect age has on women's attitude and anxiety towards cervical screening. Age will also be included as an independent variable for linear regression to assess any effects it may have on intentions.

The Impact of Education on Screening Participation

A study carried out by the NHS, found that 1 in 2 women from deprived regions skip their smear test appointments. Jo's Cervical Cancer Trust then posed a question to participants to gauge their understanding of cervical screening, asking how many women would avail of a free test that could prevent the development of cervical cancer; 94% of women questioned said they would avail if it was available (NHS, 2018).

A lack of or limited education on health-related issues has been recognised as a contributing factor to women not going for regular smear test. In a 2011 study published in the Journal of Research in Health Sciences, a group of scientists investigated the application of the Health Behaviour Model (HBM) in a group of women to investigate the effect of education intervention in cervical cancer screening. The study had 70 participants between the ages of 16-54 years, who had never been for a smear test before. The participants were divided into two groups and received a two-hour education session on cervical cancer and the importance of smear tests. A questionnaire handed out to the women after two sessions of the 2-hour training were completed showed an increase from 0% to 81.4% in smear practice (Shojaeizadeh, Hashemi, Moeini & Poorolajal, 2011).

These findings represent the misconceptions surrounding cervical screening, which results in a decrease in uptake for screening. It is for this reason that participants involved in this study were required to answer questions based on their level of education. Education is an independent variable and is analysed against the dependent variables of anxiety, attitude and intentions, in an effort to further understand if education impacts a women's anxiety towards screening, attitude towards cervical screening and their intentions to attend future smear tests (Laranjeira, 2013).

Education will be used as an IV for a one-way anova to analyse its effect on women's attitude and anxiety level's towards screening. The IV, education will also be used as part of a linear regression to assess its effect on women's screening intentions.

How Past Screening Behaviour Can Impact Future Screening Behaviour

It is known that behaviours we have performed in our past are a strong predictor for the behaviours we will perform in the future (Harris et al, 2015). This study has included past screening behaviour to assess its validity in predicting future screening intentions. A total of 206 females with a mean age of 36.12 took part in the study. Roncanio et al, found past

screening behaviour ($p = .04$) to be significant in predicting future screening intentions. The researchers mentioned how introducing past screening behaviour improved the validity of the TPB model as analysing past screening behaviour may determine future intentions to participate in screening. Their findings reported that women who had previously gone for a smear test, expressed much greater intentions to participate in screening in the future than women who had never been for a smear (Roncancio et al, 2013).

In addition, past screening behaviour has been researched in great detail in the context of breast cancer screening. A study by Lawal et al 2017, concluded that the Theory of Care Seeking Behaviour (CSB) was the most useful model due to its inclusion of the investigation of habits. Participation in regular mammography screening and other health behaviours such as cervical screening were found to have a significant impact on a woman's behaviour to continue with mammography screening. Furthermore, participation was seen to be affected by socio-economic status, which may explain low uptake rates in disadvantaged areas (Lawal et al, 2017).

An independent t-test will be used to examine if anxiety levels and attitude of participants play a role in previous screening behaviour. A regression will then include previous screening behaviour as an independent variable to assess if it has an effect on women's screening intentions.

Applying the Theory of Planned Behaviour to Determine Screening Intentions

The Theory of Planned Behaviour model (TPB) has been used in many studies addressing screening intentions, and it has been useful in understanding what affects these intentions. Roncancio's 2013 study used the model to understand screening intentions of women from the Latina community. The researchers found the TPB model to be useful in identifying screening intentions of women, with the results showing perceived behavioural control to be

the strongest predictor of intentions followed by attitude and subjective norms (Rocancio et al., 2013).

Women's intentions to go for regular smear tests may be influenced by factors including; health benefits, societal norms and general practitioner (GP) influence. A 2014 study carried out by CERVIVA research consortium found that a patient's GP may have a positive or negative influence on a woman's participation in a screening programme. The research found common themes among the participants such as health benefits and prompting by the GP being motivators for women to attend regular smear tests. The research concluded that a doctor's influence may impact a patient's intention greatly. The attitude of the GP and promoting of smear tests by a GP were found to be major factors in influencing screening participation. A woman's own belief and convenience of the test were found to be key motivators for screening participation (O'Connor et al., 2012).

Identifying women in the community with low intentions is the first step to increasing screening attendance. A study in *The Irish Journal of Psychology* found perceived behavioural control and anticipated regret to be the strongest predictors of intention. The researcher suggests action plans put in place are not likely to increase women's screening intentions but to ask women what the aversive emotional consequence would be if they do not attend regular cervical screening. If women foster personal control over their health it could increase intentions to participate in screening (Walsh, 2005).

The TPB model is widely used in understanding screening behaviour and is favourable for its inclusion of perceived behavioural control as a possible factor for predicting intentions. However, there are limitations to the TPB model that need to be taken into consideration. The model does not consider socio-economic factors of participants, and although it aims to

predict intentions, a person's intentions will not always lead to a performance of the behaviour in question (Lawal et al., 2017).

A regression analysis using Intentions as the dependent variable, will show whether the independent variables: age, education, recent smear attendance, attitude, subjective norms, control and anxiety impact a women's intention to attend smear appointments.

Research Rationale

The purpose of this study is to examine the factors which are most likely to influence women's intentions to participate in screening in the future and to further understand how anxiety and attitude affect whether a woman will attend her smear test. This is done by understanding her smear test attendance history and examining whether age difference and education levels can impact a woman's attitude and anxiety levels towards screening.

Previous studies have looked at past screening behaviour and have used the TPB model to understand what factors predict cervical screening intentions, however they have overlooked factors such as anxiety levels, age and education. Roncancio et al focused their study on a cohort of women with a mean age of 36.12. The screening programme is offered to women up to the age of 65 years, and in Ireland there is an issue with older women presenting for screening. Inclusion of all age groups eligible for screening allows for better understanding of what factors influence women of different ages to attend their smear test. Identifying a clear difference between anxiety, attitude, and past screening behaviour in women of different ages, could help address the need for age specific information leaflets and media campaigns from the Irish cervical screening programme (Roncancio et al., 2013).

As Ireland is becoming an increasingly multicultural population, future research should address ethnic diversity and its effect on screening. Coronado et al 2004 looked at the

associated between ethnicity and cervical screening and found that women who are less acculturated are not as likely to attend screening (Coronado et al., 2004). Women are also less likely to be presented for screening when they are not living in their native county (Webb et al., 2004). The gender of the smear taker (GP or nurse) may also have implications in determining whether a woman will go for a smear. Webb et al 2004 study reported that women were less likely to go for a smear test if the practitioner taking the smear was a male. The researchers mention how identifying female practitioners on a woman's screening invitation letter, could be useful in encouraging women to go for their smear (Webb et al, 2004). Future research may include qualitative questions to understand what women want to see implemented in the screening programme which may increase screening intentions.

Follow-on research into this topic may benefit by introducing questions to assess women's knowledge of the aetiology of cervical cancer. Although this study requested women's education status, introducing specific health related questions may be more useful in assessing women's knowledge of cervical cancer, as misconceptions of cervical screening may be a factor that negatively influences a woman's screening attendance. Laranjeira's 2013 study focused on women's knowledge of screening. The study found that both unmarried women and women who are not sexually active thought they were low risk for developing cervical cancer and therefore they would not need a smear test. Misconceptions of cervical screening could be something which the screening programme may need to address. An intervention programme may also be useful to assess how information sessions influence screening behaviour, and measure whether there is an increase in screening attendance after these sessions (Laranjeira, 2013).

Hypotheses

Women who answered yes to attending their most recent smear test will have lower levels of anxiety towards screening. Women who failed to attend their most recent smear test will have higher levels of anxiety related to going for a smear test.

In addition, women who answered yes to attending their most recent smear test will have a more positive attitude towards screening. Women who failed to attend their most recent smear test will have a more negative attitude related to going for a smear test.

Anxiety levels towards smear tests will be affected by the age of the participants. Women's anxiety related to smear tests will decrease as they get older, due to increased exposure to gynaecological appointments from childbirth and previous experience of smear tests. Women in the younger age group will experience higher levels of anxiety as they have less experience of gynaecological assessments and would have very little experience of the process of a smear test.

Furthermore, anxiety levels will be affected by the education status of the participants. Women of higher education will have increased anxiety levels associated with going for a smear test, due to social pressure and knowledge of the possible outcomes of smear results. Women of higher education may also be experiencing general anxiety due to work demands that affects their overall anxiety levels. Women with a lower level of education will experience less anxiety when going for a smear test, this may be due to a lack of understanding of the implications that may be involved in an abnormal smear result and due to less social pressure.

A woman's attitude towards screening will be more positive as she ages. Women in the younger age group will have a more negative attitude towards screening due to limited experience and personal understanding of the service.

In addition, a woman's attitude towards screening will be more positive towards screening based on education as she will have a better understanding of the process. Women in the lower range of education will have a more negative attitude towards the screening process due to a lack of understanding of its importance.

Education, age, recent smear attendance, anxiety, behavioural control, subjective norms and attitude will be factors associated with influencing a women's intentions to participate in cervical screening in the future.

Methodology

Participants

The women who participated in this study were recruited online through social media platforms; Facebook and Instagram. The main criteria for inclusion in the study was the age of the participants. Any woman who took part in the questionnaire was required to fit in one of the three age categories specified: 25-39, 40-50 and 51-65 years. Women were not eligible for this study if they were under the age of 25 years or over the age of 65 years. As the age specification was mentioned in the information page, women who were not eligible for this study would not have continued.

Most responses came from women aged between 25-39 years making were mostly of Irish decent (94%) and consisted of well-educated women, with 85% of participants having some form of third level education.

This was a voluntary study; no woman was paid for their participation. Section one of the questionnaire included questions based on demographics, including; education, nationality, health insurance status, relation to a health care professional, recent smear attendance and any plans for a future smear appointment (see appendix B). The only compulsory question in the questionnaire was the age group of the participants. Section two assessed levels of anxiety associated with going for a smear test. The final section was made up of questions relating to The Theory of Planned Behaviour to assess women's intentions, behavioural control, attitude and subjective norms.

Design

This was a quantitative study, and data was collected over a 4-week period in January/ February 2019. The data was downloaded from google forms onto an excel spreadsheet where it was coded before being used in SPSS.

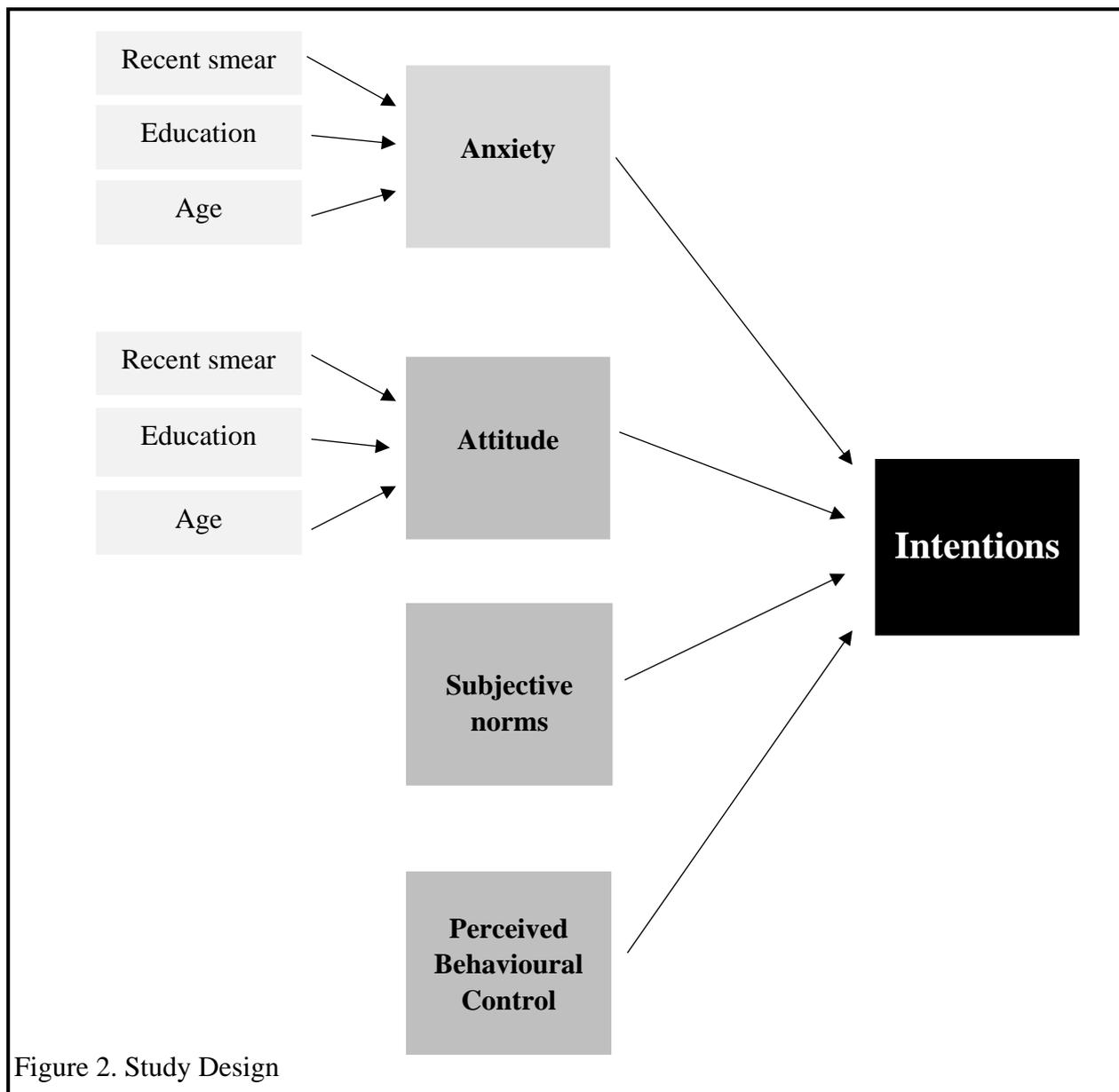
Two separate independent T-tests were run using the independent variable (IV); recent smear, against the dependent variable (DV); attitude and anxiety.

A total of four separate one-way anovas were run as follow (see table 1).

Table 1.

	Independent Variable (IV)	Dependant Variable (DV)
Anova 1	Education	Attitude
Anova 2	Education	Anxiety
Anova 3	Age	Attitude
Anova 4	Age	Anxiety

A linear regression was carried out using the independent variables; age, education, recent smear, attitude, subjective norms, control and anxiety, against the dependent variable: intentions.



Materials

This questionnaire measured various demographics, anxiety levels, attitude, subjective norms, behavioural control and intention related to smear tests.

DASS- Anxiety measure: The Depression Anxiety Stress Scale (DASS), is a 42-item self-report instrument which has been designed to measure mental health, focusing on three negative emotional states of depression, anxiety and stress (Lovibond, P., 2018).

It was designed by Peter and Syd Lovibond in 1995 at the University of New South Wales (Lovibond, S., Lovibond, P., 1995). The Depression Anxiety Stress Scale (DASS) is a self-administered questionnaire designed to measure levels of depression, anxiety and stress. For the purpose of this study, only the anxiety questions were used from the DASS. The DASS-anxiety measure focused on physiological arousal, fear and perceived panic and was used in the context of attending a smear appointment. A participant's response was graded on a scale of 0 to 3, 0 "does not apply to me at all", and 3 "applies to me very much". The DASS-anxiety measure was the second section of the questionnaire and consisted of 5 short questions. The instructions for this section dictated that participants must answer in relation to how they feel when they attend a smear appointment (Parkitny & McAuley, 2010).

Theory of Planned Behaviour: The Theory of Planned Behaviour (TPB) was developed by Azjen and it attempts to link beliefs to behaviour. Azjen states that a health behaviour is part of a direct result of a behavioural intention. These behavioural intentions are divided into three separate components: the *attitude* towards the action, *subjective norms* of the action and *perceived behavioural control*. Looking at these three components in greater detail, the attitude a person has to a specific action is based on outcomes and evaluations of these likely actions, while a person's subjective norms are the belief of what other people think that person should do and their motivation to comply with the normative beliefs. Perceived behavioural control is the perception that they can perform said action with the intended effect. An example of the theory of planned behaviour on a health issue such as smoking would see a smoker who believes that smoking has serious effects on health, who has people in their life that believe that they should quit smoking and believe that they will be able to quit smoking themselves. These people are more likely to quit smoking than those who do not hold these same beliefs (Taylor., 2015). The more favourable the attitude and the subjective norm, and the greater the perceived

control, the general rule states that there will be a stronger intention to perform the specified behaviour (Ajzen, 1991).

Procedure

The questionnaire was created using google forms and consisted of three sections; demographics, anxiety measure and theory of planned behaviour. An introductory page was inserted at the beginning of the questionnaire, and participants were instructed to continue with the study if they were satisfied with the information regarding data protection, anonymity and the research proposal (see appendix A).

A total of 282 women took part in this questionnaire, which was live for a total of four weeks and was accessed through links shared on the social media platforms; Instagram and Facebook. Once the participants completed the questionnaire, a debriefing page appeared, including contact details for the Samaritans, Aware and Cervical Check, for any concerns of queries the participants may have had (see appendix E).

The data was then downloaded from google forms in a Microsoft excel file, where the responses were then coded into numerical form for SPSS.

Ethics

This study was ethically approved by the DBS board of ethic. This study falls under category A as no vulnerable people participated in the research. Participation was completely anonymous as no personal information such as name or email was required. As per section 1.3.4 of the PSI code of ethics, any woman who completed the questionnaire did so under their own volition and were asked if they wanted to continue with the study after reading the introductory sheet (PSI, 2011).

Results were downloaded from google forms and are being stored in a manner that complies with section 1.2.7 of the PSI code of ethics, stating all data remains private and only identifiable to the researcher. All data has been coded and stored on a laptop requiring a passcode (PSI, 2011).

Furthermore, as per section 1.4.3 of the PSI code of ethics, participants had the right to withdraw from the study at any point up until submission of the questionnaire (PSI, 2011).

Data analysis

Following all data being coded in excel, the excel data sheet was opened in SPSS version 25. Independent samples T-tests and one-way anovas were run on independent variables from the demographics with anxiety and attitude as dependent variables.

A regression was carried on independent variables; age, educations, smear test, attitude, subjective norms, control and anxiety, with intentions as the dependent variable to assess whether these independent variables impact women's intentions to go for regular smear appointments.

The independent-samples t-test is used to compare the means of two unrelated groups with a dependent variable. A one-way anova analysis is chosen to determine statistical significance between the means of two or more unrelated groups. Before carrying out a one-way anova or t-test, several assumptions must be met. Three assumptions can be met before statistical analysis is performed, such as; the dependent variable must be that of a continuous scale (ratio or interval), independent variable must be categorical data and there should be independence of variance i.e. no relationship between the groups used (Laerd, 2018).

Results

Demographic details of the sample

The majority of women who participated in this study were between the ages of 25-39 years, illustrated in the chart below is a summary of the sample's age range:

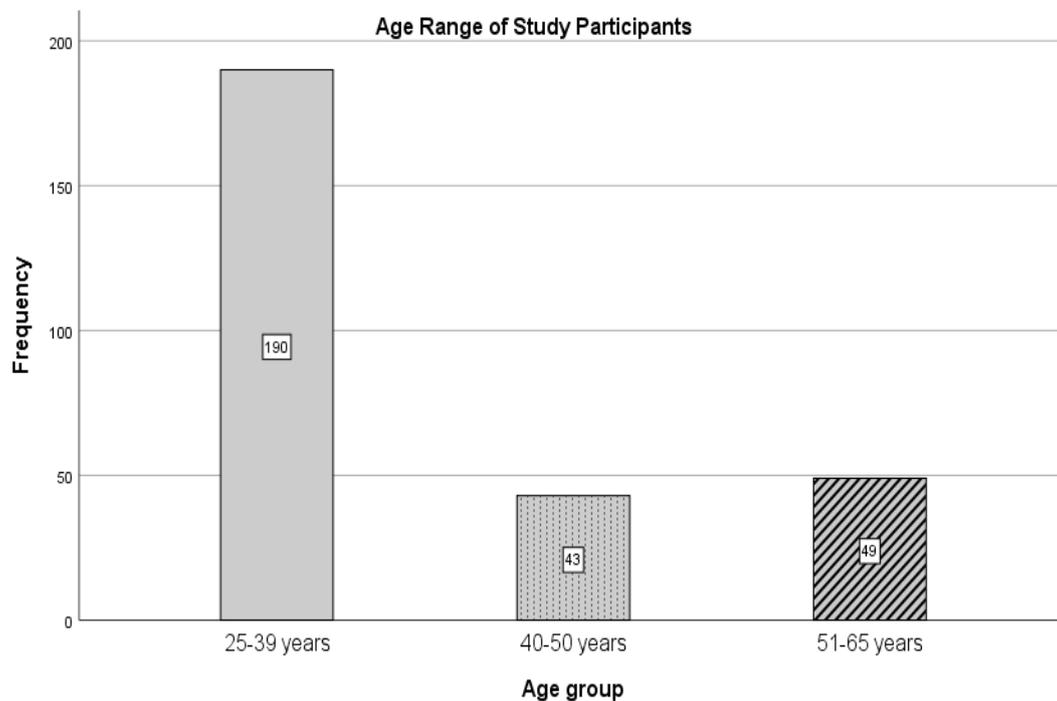


Chart 1. Comparison of the samples age range

A total of 282 women participated in this study, 94% of which were of Irish nationality, 70% of participants had health insurance, 64% know a doctor, nurse or other health care professional personally. When asked if they plan on going for a smear in the next six months, 68% of the sample answered no (see table 2).

Table 2. Descriptive Statistics of Demographic Characteristics of sample (N = 282)

		Health				Been for a	Plan on a smear
		Age group	Nationality	insurance	HCP	Education	recent smear
N	Valid	282	277	280	281	281	281
	Missing	0	5	2	1	1	1
Mean		1.50	1.19	1.29	1.36	2.83	1.19
Median		1.00	1.00	1.00	1.00	3.00	1.00
Mode		1	1	1	1	3	1
Std. Deviation		.77	1.14	.46	.48	.43	.39
Variance		.60	1.29	.21	.23	.18	.15
Skewness		1.14	6.70	.92	.61	-2.58	1.63
Std. Error of Skewness		.15	.15	.15	.15	.15	.15
Kurtosis		-.38	46.74	-1.17	-1.65	6.23	.66
Std. Error of Kurtosis		.29	.29	.29	.29	.29	.29
Range		2	10	1	1	2	1
Minimum		1	1	1	1	1	1
Maximum		3	11	2	2	3	2

Women were asked to if they had attended their last scheduled smear test, to determine if past behaviour is a factor in predicting future screening intentions. A total of 18% of participants said they failed to attend their last smear test, as illustrated in chart 2 below:

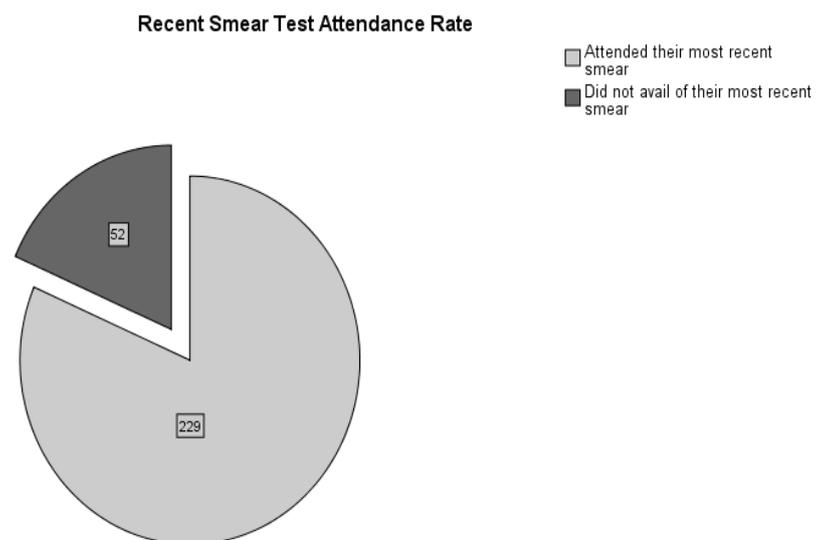


Chart 2. Recent smear test attendance: an indication of past screening behaviour

The following chart illustrates the samples level of education:

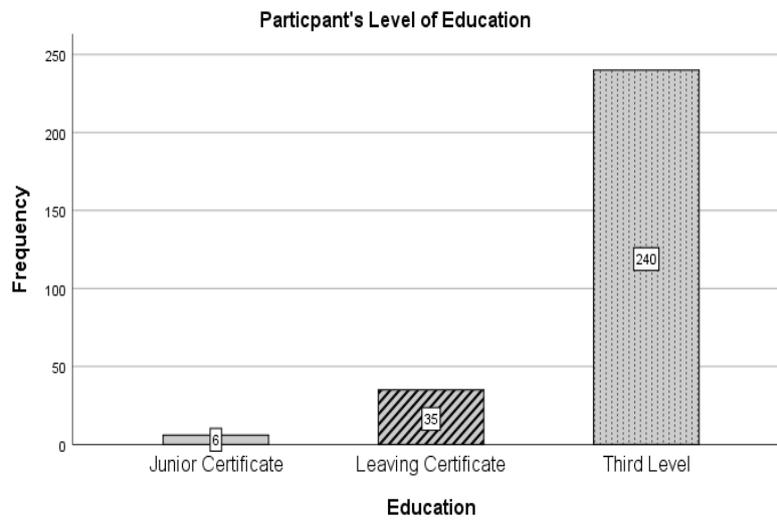


Chart 3. Comparison of the samples level of education

Reliability Statistics

Internal consistency of the DASS requires a Cronbach's alphas of 0.88 for anxiety. Reliability statistics was performed on all variables for anxiety. The Table below illustrates that the Cronbach's Alpha score of .88 for five items is reliable.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.88	.88	5

Table 3. Reliability statistics for DASS anxiety measure

Reliability testing was also carried out on the 41 items of the Theory of Planned Behaviour model. A Cronbach's alpha score of .5 was calculated as is illustrated in table 4.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.46	.56	41

Table 4. Reliability statistics for the TPB model

Recent Smear Test Attendance and Attitude

An independent samples t-test found that there was a statistical difference between the attitude of women who had recent availed of their free smear test ($M = 21.46$, $SD = 3.29$) and those who did not present for their most recent smear ($M = 19.19$, $SD = 4.24$) ($t(279) = 4.24$, $p = .00$, $CI (95\%) 1.26 \rightarrow -3.33$). Therefore, the null can be rejected, as women who had recently presented for their smear ($N = 229$) had higher scores for attitude with a mean score of 21.46 (see table 5).

Table 5. Descriptive statistics

Been for a recent smear		N	Mean	Std. Deviation
Attitude	Yes	229	21.46	3.29
	No	52	19.19	4.25

Recent Smear Test Attendance and Anxiety

An independent samples t-test found that there was a statistically significant difference between anxiety levels of women who did not present for their most recent smear (M = 10.57, SD = 8.97) and those who had availed of their most recent smear test (M = 8.06, SD = 8.19) ($t(279) = -1.96, p = .05, CI (95\%) -5.04 \rightarrow .01$). Therefore, the null can be rejected as women who presented for their most recent smear test (N = 229) had lower scores on the anxiety scale with a mean score of 8.06 (see table 6).

Table 6. Anxiety levels of sample based on past screening attendance

	Been for a recent smear	N	Mean	Std. Deviation
Anxiety	Yes	229	8.06	8.19
	No	52	10.58	8.97

Anxiety levels and Education

A one-way analysis of variance showed that levels of anxiety differed significantly between the three groups of education status ($F(2, 278) = 3.14, p < .00$). More specifically, Tukey HSD post hoc analysis highlighted that the 3rd level educated women had higher levels of anxiety (Mean difference = -8.48, $p = .04, CI (95\%) -16.59, -.38$), compared to the women with only junior certificate level education who had a mean anxiety score of .33 (see table 7).

Table 7. A comparison of anxiety levels based on samples level of education.

	N	Mean	Std. Deviation
Junior certificate	6	.33	.82
Leaving certificate	35	7.94	8.79
Third Level	240	8.82	8.34

N = 281 (missing data = 1)

Anxiety and age

A one-way analysis of variance showed that levels of anxiety differed significantly between the three different age groups of the sample ($F(2,279) = 11.07, p < .00$). More specifically, Tukey HSD post hoc analysis highlighted that women aged between 40-50 years (Mean difference = 3.70, $p = .20$, CI (95%) .48, 6.93) and 51-65 years (mean difference 5.58, $p = .00$, CI (95%) 2.52, 8.64) had lower anxiety compared to the women aged between 25-29 years who had a mean anxiety score of 10.03 (see table 8)

Table 8. Anxiety levels associated with screening based on age group of the sample.

	N	Mean	Std. Deviation
25-39 years	190	10.03	8.33
40-50 years	43	6.33	8.66
51-65 years	49	4.45	6.53

Attitude and education

There were no significant findings for the difference in attitude of the sample based on their level of education. Therefore, we fail to reject the null hypothesis and cannot accept the alternative hypothesis

Attitude and age

There were no significant findings for the difference in attitude of the sample based on their age. Therefore, we fail to reject the null hypothesis and cannot accept the alternative hypothesis.

Regression Analysis for Predictors of Intentions

Multiple regression was used to test whether age, education, recent smear status, attitude, subjective norm, behavioural control and anxiety were predictors of intentions to go for a smear test. The results of the regression showed that the seven predictors showed 39% of the variance ($R = .39$, $F(7, 272) = 26.89\%$, $p < .001$). It was found that recent smear status was a predictor for intentions to schedule and attend future smear tests ($\beta = -.30$, $p = .00$, 95% CI = -3.93, -1.97) as was attitude ($\beta = .18$, $p = .00$, 95% CI = .08, .30) and behavioural control ($\beta = .39$, $p = .00$, 95% CI = .28, .54). Age, education, subjective norm and anxiety were not found to be statistically significant for predicting women's intentions to attend smear tests in the future (see table 9).

Table 9. Descriptive statistics of factors which influence intentions: regression analysis

	Mean	Std. Deviation	t	sig
Age group	1.49	.77	-.14	.88
Education	2.83	.43	.64	.52
Been for a recent smear	1.18	.39	-5.94	.00*
Attitude	21.05	3.59	3.41	.00*
Subject norms	14.43	3.19	-.28	.78
Behavioural control	20.36	3.15	6.17	.00*
Anxiety	8.52	8.40	-1.10	.27

N = 280 (missing data = 2).

*P < .05 level of significance

A mahalanobis distance of 34.19, exceeds the cut-off value of 24.32 for regression analysis using seven variables. As the mahalanobis distance has been exceeded, outliers are present, and normality cannot be assumed until all abnormal data (outliers) is removed.

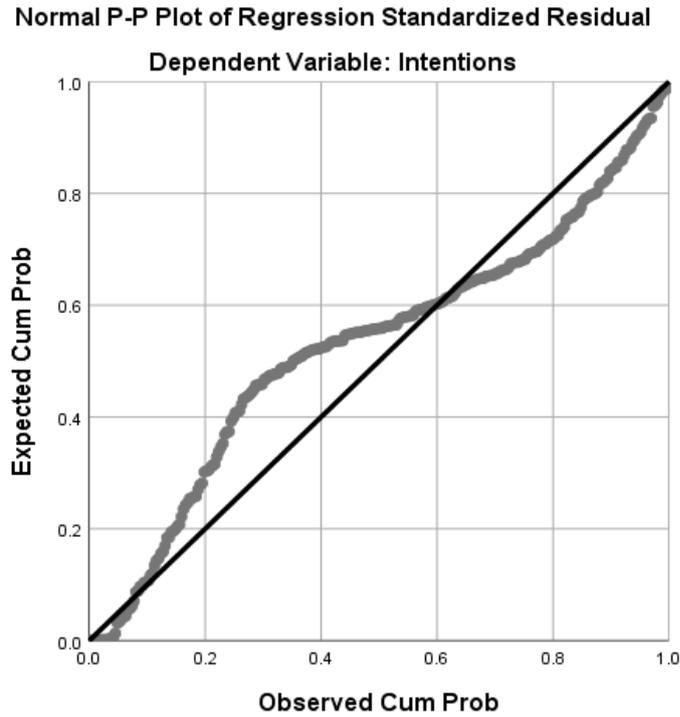


Chart 4. Normality plot of the standardized residuals representing a slight linear relationship.

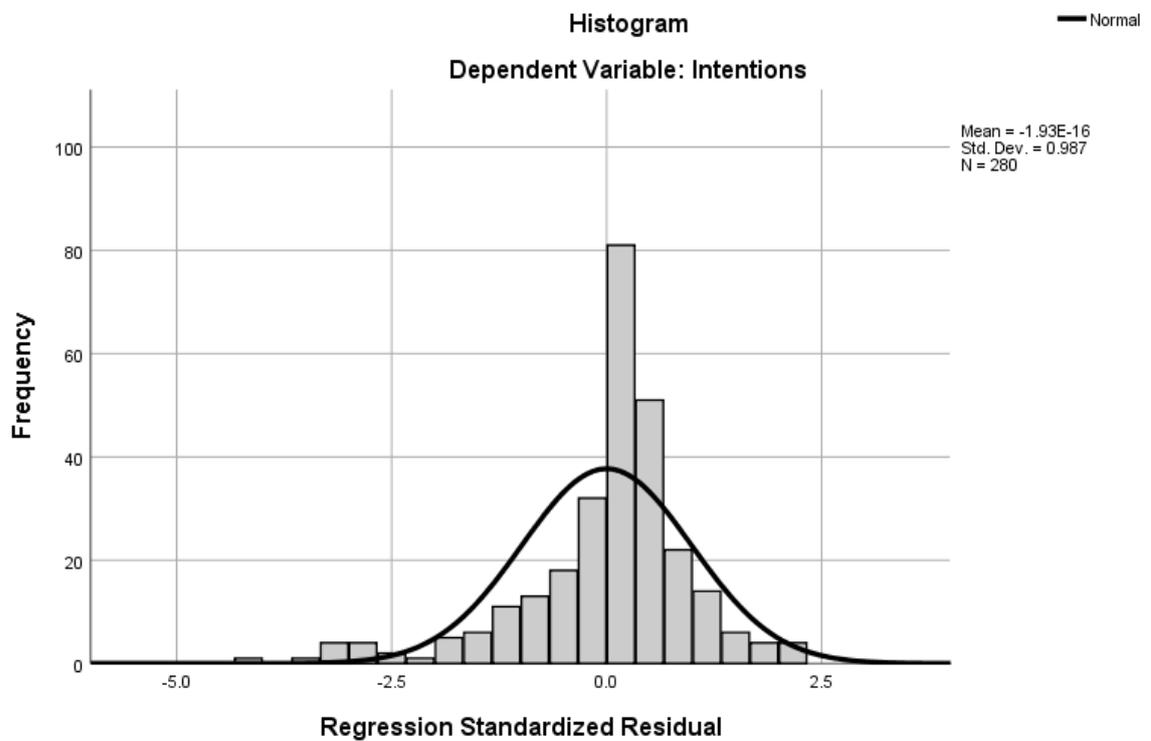


Chart 5. Histogram distribution of standardized residuals representing a slightly normal distributed curve.

Discussion

The role of anxiety and attitude in past screening behaviour

The questions on direct attitude aimed to understand women's experience of a smear test on a scale of negative to positive, and questions on anxiety were related to the feelings they experienced when at their last smear test. An independent samples t-test revealed that women who had attended their most recent smear test had a higher score for attitude ($M = 21.46$) i.e. a more positive attitude towards screening and lower scores for anxiety ($M = 8.06$) i.e. lower anxiety levels associated with cervical screening. Women who did not attend their most recent smear were shown to have higher levels of anxiety ($M = 10.58$) and a more negative attitude ($M = 19.19$) in relation to screening.

A study by Lawal et al, focusing on women's behaviour and breast screening found similar results in regard to attitude. The researchers reported that women were more likely to attend a breast screening if the attitude they had adopted favoured a positive outcome over a negative outcome. The researchers concluded that more education on the subject was required as many women are preventing themselves from the benefits of mammography (Lawal et al 2017).

Furthermore, avoidance of the cervical screening examination may be a contributing factor in increasing women's anxiety levels and creating a negative attitude related to this cervical screening. A study in *Nature Reviews: Neuroscience*, looks at the power of avoidance in predicting our behaviour. Grupe & Nitschke 2013 describe the brain as an "anticipation machine", as it uses information on one's experience to help predict future outcomes. If a person has no experience to draw from for a future event, this uncertainty contributes to anxiety, and would increase negative feelings/ attitude towards the event in question. This would suggest that experience would lessen anxiety levels and increase positive attitude towards a behaviour,

which in this case is presenting for a smear test, and that avoidance of a smear test could build up anxiety levels and negative attitude towards cervical screening (Grupe et al, 2013).

In addition to the use of the TPB model, future research on this area should include The Theory of Care Seeking Behaviour (CSB). This model was developed by Lauver in 1992 and includes measures of affect and habit. Affect refers to feelings of anxiety relating to a diagnosis and embarrassment of the procedure or examination. Habit refers to experience in care-seeking behaviour and how a person would act if they have symptoms. A more in-depth understanding of past behaviour using the CSB would aid in the understanding women's screening intentions (Lauver, 1992).

The effect of education and age on women's anxiety levels associated with screening

One-way Anova analysis looked at age groups and education levels in two separate tests. The results showed women in the age group 25-39 years had significantly higher levels of anxiety (M = 10.03) compared to the women in the age group 40-50 years (M = 6.35) and 51-65 years (M = 4.45). Education levels also proved to be statistically significant in relation to women's anxiety levels towards screening. Women with only junior certificate level education had a mean anxiety score of 3.33, while women with leaving certificate education has an anxiety score of 7.94 and women of third level education had an anxiety score of 8.82. These results show a trend in increasing anxiety levels as education levels increase.

A study focusing on HIV testing in men and women in India, showed anxiety levels were higher in the highly educated women, similar to the results of this study. The researchers concluded that social pressure and expectations put on women of higher education may contribute to their high levels of anxiety (Sahay et al, 2007).

Women within the older age group of this study are more likely to have experienced smear tests and other gynaecological examinations in the past. As previously mentioned, the study by Grupe & Nitscke highlights the importance of past experience and how this can help reduce anxiety when performing similar behaviours in the future (Grupe et al, 2013).

The women with lower education status and the women in the age group 51-65 years were seen to have lower levels of anxiety related to cervical screening, however this is not a predictor of screening attendance, and furthermore, only 2% of women who participated in the study had junior certificate level education and only 17% of participants were between the ages of 51-65 years. Future research should include a cohort that is more evenly distributed across age and education to be able to identify if they truly are factors involved in reducing screening associated anxiety.

Factors associated with influencing women's screening intentions

This study examined the contribution of subjective norms, behavioural control, attitude, anxiety, age, education and recent smear status in influencing women to attend smear tests in the future. A measure of direct subjective norm was not a predictor of intentions, which demonstrates that perceived social pressure was not a factor in influencing this cohort to have a smear test. Age difference did not play a role in predicating intent and neither did the difference in education levels of the cohort. Furthermore, anxiety levels using the DASS model also proved to be insignificant in predicting women's intentions to attend future smear tests.

The aim of this study was to understand what factors are associated with cervical screening intentions. The research found behavioural control, attitude and recent smear test attendance to be statistically significant in predicting future intentions relating to smear test attendance. Participants were asked in the demographic sections (see appendix B) if they had attended their last scheduled smear, to which 229 (81%) of participants answered yes. This question was

designed to understand past behaviour of the cohort, while questions on direct attitude looked to understand their perceptions of smear tests and questions on direct behavioural control aimed to understand women's confidence/ control within themselves that they could attend smear test appointments. The results of this study are in line with previous research using the TPB model in understanding health behaviours. A review of Ajzen's TPB model by Godin and Kok in 1996, found behavioural control and attitude of health-related behaviours to be the strongest predictors of intent (Godin & Kok, 1996). A study by Bish et al, looked at predicting uptake of routine cervical smear test using the TPB and health belief model (HBM). They found similar results to this study, showing attitude and behavioural control to be the most important factors in influencing women's intentions to be screened (Bish et al., 2000).

The multiple regression resulted in a mahalanobis distance of 34.19 that exceeded the cut-off point. For this reason, normality could not be assumed. Due to time constraints, the abnormal data could not be removed. A future suggestion would be to remove any outliers present and run the multiple regression analysis until a mahalanabois distance of 24.32 or below is reached (Wai Lai & Hitchcock, 2014).

Future applications

This study has provided support for the use of the TPB model to determine screening intentions. Women who had previously been for a smear test and had high scores for behavioural control and attitude were found to have greater intentions to participate in screening in the future. In order to increase screening uptake rates, intervention of non-attenders is needed to address screening behaviour and address women's attitude toward screening and their behavioural control. A study by Gollwitzer & Sheeran mentions the importance of developing a strong link between intention and behaviour, and that the most effect means of intervention is the 'implementation intention' in which a person has to form

as specific plan detailing how and where the behaviour will take place as this will aid women in carrying out their intentions (Gollwitzer et al., 2006).

Media campaigns are powerful in informing society on certain health issues such as cervical cancer screening. They have been used to help educate women on cervical screening through normalising the process. At present, media focus is dedicated to increasing the uptake of the HPV vaccine. The vaccine uptake was at 82% within the first year but in 2016 it fell to 50% due to information of adverse reactions being attributed to the vaccine. An introduction of the ‘protect our future’ campaign has seen vaccine uptake rise to 62% in 2017. The campaign had a sole focus to increase awareness and address any misconceptions of the vaccine and evidently, it has been a success (HSE, 2018). Implementing a similar campaign in response to the cervical check scandal may be required to elevate anxiety and increase awareness of the positive attributes of the cervical screening programme. With a 7% reduction in cervical cancer every year since implementing the screening programme in 2008, ensuring women avail of the service is vital in reducing the prevalence of the disease. Understanding which factor influence women’s intentions to attend screening is a step in the right direction to ensuring maximum uptake of the programme (RCPI, 2018).

References

- Allen, G. (2004). *Reducing women's fears and anxieties about smear tests*. Nursing in Practice. Retrieved from: <https://www.nursinginpractice.com/article/reducing-womens-fears-and-anxieties-about-smear-tests>
- Azjen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 190-211. Retrieved from: <http://www.midss.org/content/theory-planned-behaviour-questionnaire>
- Bish, A., Sutton, S., & Golombok, S. (2000). Predicting uptake of a routine cervical smear test: A comparison of the health belief model and the theory of planned behaviour. *Psychology & Health*. 15(1), 53-50. Doi: <http://dx.doi.org/10.1080/08870440008400287>
- Calnan, D. (2018). Doctor 'Predicted cervical smear test issue 10 years ago'. The Independent. Retrieved from: <https://www.independent.ie/irish-news/health/doctor-predicted-cervical-smear-test-issues-10-years-ago-36858027.html>
- CDC. (2014). *Cervical Cancer is Preventable*. Centre for Disease Control and Prevention. Retrieved from: <https://www.cdc.gov/vitalsigns/cervical-cancer/index.html>
- Cervical Check, (2018). *About the cervical screening programme*. Cervical Check. Retrieved from: <http://www.cervicalcheck.ie/information-for-health-professionals/about-the-programme.149.html>
- Chang, HK., Myong, JP., Byun, SW., Lee, SJ., Lee, YS., Lee, HN., Lee, KH., Park, DC., Kim, CJ., Hur, AY., Park, JS. & Park, TC. (2017). Factors Associated with Participation in Cervical Cancer Screening Among Young Koreans: A Nationwide Cross-Sectional Study. *The British Medical journal*. 7(4). doi: 10.1136/bmjopen-2016-013868
- Coronado, GD., Thompson, B., Koepsell, TD., Schwartz, SM., & McLerran, D. (2004). Use of Pap test among Hispanics and non-Hispanic Whites in a rural setting. *Preventative Medicine*. 28(6), 713-22. Retrieved form: <https://www.ncbi.nlm.nih.gov/pubmed/15193891>
- Deeks, A., Lombard, C., Michelmore, J., & Teede, H. (2009). The effects of Gender and Age on Health Related Behaviors. *BMC Public Health*. 9, 213. doi:10.1186/1471-2458-9-213

- Godin, G., & Kok, G., (1996). The Theory of Planned Behaviour: A Review of its Application to Health-Related Behaviours. *American Journal of Health Promotion*, 11(2): 87-98. <https://doi.org/10.4278/0890-1171-11.2.87>
- Gollwitzer, P. M., & Sheeran, P. (2006). Implementation intentions and goal achievement: A meta-analysis of effects and processes. *Advances in Experimental Social Psychology*, 38, 69–119.
- Grupe, D., & Nitschke, J. (2013). Uncertainty and anticipation in anxiety: An integrated neurobiological and psychological perspective. *Nature Reviews Neuroscience*, 14(7), 488-501. Doi: 10.1038/nrn3524
- Harris, L., Lee, V.K., Thompson, E.H. & Kranton, H. (2015). Exploring the Generalization Process from Past Behaviour to Predicting Future Behavior. *Behavioral Decision Making*, 29(4), 419-436. <https://doi.org/10.1002/bdm.1889>
- HSE. (2018). *Benefits and Limitations of Screening*. Health Service Executive. Retrieved from: https://www.hse.ie/eng/cervicalcheck/screening-information/why-you-are-offered-a-free-cervical-screening-test/benefits-and-limitations-of-screening.html?campname=carousel&camplink=cervical_box2
- HSE. (2018). *How we used social media to increase HPV vaccination rates*. Health Service Executive. Retrieved from: <https://www.hse.ie/eng/about/who/communications/digital/blog/how-we-used-social-media-to-increase-hpv-vaccination-rates.html>
- Hicks, C. (2015). *Why are older women not having regular smear tests?* The telegraph. Retrieved from: <https://www.telegraph.co.uk/lifestyle/11685923/Why-are-older-women-not-having-regular-smear-tests.html>
- Irish Cancer Society (ICS), (2018). *About Cervical Cancer*. Retrieved from: <https://www.cancer.ie/cancer-information/cervical-cancer/about#sthash.MVG1dr33.2zrgYtv8.dpbs>
- Koc, R., Szafraniec-Burylo, S.I., Prokurat, E., Prusaczyk, A., Zuk, P., Sakowska, I., Prusaczyk, A.S., Guzek, M., Banasiewicz, J., & Dmoch-Gajzlerska, E. (2017). Is anxiety a reason for non-participation in cervical cancer screening? Questionnaire

- among patients in integrated care organization in Poland. *International Journal of Integrated Care*. 17(5), 243. Doi: <http://doi.org/10.5334/ijic.3554>
- Laerd, (2018). *Independent t-test using SPSS statistics*. Laerd Statistics. Retrieved from: <https://statistics.laerd.com/spss-tutorials/independent-t-test-using-spss-statistics.php>
- Lauver, D. (1992). A Theory of Care-seeking Behavior. *The Journal of Nursing Scholarship*. 24(4), 281-7. Doi: 10.1111/j.1547-5069.1992.tb00734.x
- Laranjeira, C.A. (2013). Portuguese Women's Knowledge and Health Beliefs about Cervical Cancer and Its Screening. *Social Work in Public Health*. 28, 150-157. Doi: 10.1080/19371918.2011.592042
- Lawal, O., Murphy, F., Hogg, P., & Nightingale, J. (2017). Health Behavioural Theories and Their Application to Women's Participation in Mammography Screening. *Journal of Medical Imaging and Radiation Sciences*. 48, 122-127. Doi: <http://dx.doi.org/10.1016/j.jmir.2016.12.002>
- Lovibond, P. (2018). *Depression Anxiety Stress Scale*. School of Psychology, New South Wales. Retrieved from: <http://www2.psy.unsw.edu.au/dass/>
- Lovibond, P., & Lovibond, S. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33, 335-343. Retrieved from: <https://openpsychometrics.org/tests/DASS/>
- NHS, (2018). *One in the women don't attend cervical screening because of embarrassment*. National Health Service. Retrieved from: <https://www.nhs.uk/news/cancer/one-three-women-dont-attend-cervical-screening-because-embarrassment/>
- Noftle, E., & Fleeson, W. (2010). Age Difference in Big Five Averages and Variabilities Across the Adult Lifespan: Moving Beyond Retrospective, Global Summary Accounts. *Psychology of Aging*. 25(1), 95-107. Doi: [10.1037/a0018199](https://doi.org/10.1037/a0018199)
- O'Connor, M., Murphy, J., Martin, C., O'Leary, J & Sharp, L. (2014). Motivators for women to attend cervical screening: The influential role of GP's. *Family Practice*. 31(4), 475-82. Doi:10.1093/fampra/cmu029
- Parkitny, L., & McAuley, J. (2010). The Depression Anxiety Stress Scale (DASS). *Journal of Physiotherapy*. 56(3), 204. Doi: [https://doi.org/10.1016/S1836-9553\(10\)70030-8](https://doi.org/10.1016/S1836-9553(10)70030-8)

- Psychological Society of Ireland (PSI). (2011). *Code of Professional Ethics*. Retrieved from: <https://www.psychologicalsociety.ie/footer/PSI-Code-of-Professional-Ethics-3>
- RCPI. (2018). *Institute of Obstetricians and Gynaecologists says it is essential that women continue to have smear tests when called*. Royal College of Physicians of Ireland. Retrieved from: <https://www.rcpi.ie/news/releases/institute-of-obstetricians-and-gynaecologists-says-it-is-essential-that-women-continue-to-have-smear-tests-when-called/>
- Roncancio, A., Ward, K., Sanchez, I., Cano, M., Byrd, T., Vernon, S., Fernandez-Esquer, M., & Fernandez, M. (2013). Using the Theory of Planned Behaviour to Understand Cervical Cancer Screening among Latinas. *Health Education and Behaviour*. 42(5), 621-626. Doi:[10.1177/1090198115571364](https://doi.org/10.1177/1090198115571364)
- Sahay, S., Phadke, M., Brahme, R., Paralikar, V., Joshi, V., Sane, S., Risbud, A., Mate, S., & Mehendale, S. (2007). Correlates of anxiety and depression among HIV test-seekers at a Voluntary Counselling and Testing facility in Pune, India. *Quality of Life Research*. 16(1), 41-52. Doi: 10.1007/s11136-006-9112-1
- Shojaeizadeh, D., Hashemi, SZ., Moeini, B., & Poorolajal, J. (2011). The Effect of Educational Program on Increasing Cervical Cancer Screening Behavior Among Women in Hamadan, Iran: Applying Health Belief Model. *Journal of Research in Health Sciences*. 11(1), 20-5. Retrieved from: <https://www.ncbi.nlm.nih.gov/pubmed/22911943>
- Taylor, S., (2015). *Health Psychology: International Edition*. McGraw Hill Education. New York. (9th Edition).
- Wai Lai, IK., & Hitchcock, M. (2014). A consideration of normality in importance-performance analysis. *Current Issues in Tourism*. 18(10), 979-1000. Doi: doi.org/10.1080/13683500.2014.990423
- Wall, M. (2018). *Cervical Screening system was doomed to fail at some point, scally report finds*. The Irish Times. Retrieved from: <https://www.irishtimes.com/news/ireland/irish-news/cervical-screening-system-was-doomed-to-fail-at-some-point-scally-report-finds-1.3626738>

- Walsh, J. (2005). Increasing screening Uptake for a Cervical Smear test: Predictors of Attendance and the use of Action Plans in Prior Non-Attenders. *The Irish Journal of Psychology*. 26(1), 65-73. Doi: doi.org/10.1080/03033910.2005.10446209
- Webb, R., Richardson, J., & Pickles, A. (2004). A population-based study of primary care predictors of non-attendance for cervical screening. *Journal of Medical Screening*. 11(3), 135-40. Retrieved from: <https://www.ncbi.nlm.nih.gov/pubmed/15333272>
- WHO. (2018). *Cancer Screening*. The World Health Organization. Retrieved from: <https://www.who.int/cancer/prevention/diagnosis-screening/screening/en/>

Appendices

Appendix A: Information sheet

My name is Hannah Deering, and I am conducting research in the Department of Psychology in Dublin Business School, that explores women's perceptions and feelings towards cervical screening.

This research is being conducted as part of my studies and will be submitted for examination. You are invited to take part in this study and participation involves completing and returning the attached anonymous survey. While the survey asks some questions that might cause some minor negative feelings, it has been used widely in research. If any of the questions do raise difficult feelings for you, contact information for support services are included on the final page.

Participation is completely voluntary and so you are not obliged to take part. Participation is anonymous and confidential. Thus, responses cannot be attributed to any one participant. For this reason, it will not be possible to withdraw from participation after the questionnaire has been collected. The questionnaires will be securely stored and data from the questionnaires will be transferred from the paper record to electronic format and stored on a password protected computer.

Should you require any further information about the research, please contact Hannah Deering at

****If you are completing this questionnaire on a mobile phone, please be aware that questions may cut off so it is important to scroll across or rotate your screen on its side.****

Thank you for taking the time to complete this questionnaire!

*Appendix B: Demographics***Questionnaire section 1:**

1. Please tick which age group you fall under:
25-39 years
40-50 year
51-65 years

2. Nationality:

3. Do you have health insurance? Yes No

4. Are or have you a relative or close friend that is a doctor/ nurse/ health care professional? Yes No

5. Education: Junior certificate Leaving certificate Third level

6. Have you presented for your most recent smear test: Yes No

7. Do you plan on going for a smear test in the next 6 months: Yes No

*Appendix C: Anxiety***Questionnaire section 2:**

Answer the following questions in relation to feelings one might experience when going for a smear test. Choose the answer that best describes how you felt when you went for your smear test or how you would imagine you would feel going for a smear test.

0- Does not apply to me at all. 1- Applied to me to some degree, or some of the time. 2- Applied to me to a considerable degree. 3- Applied to me very much or most of the time.

1. I was aware of dryness of my mouth: 0 1 2 3
2. I experienced a change in my breathing: 0 1 2 3
3. I was worried I might panic: 0 1 2 3
4. I experienced a change in my heart rate: 0 1 2 3
5. I felt I was scared without any good reason: 0 1 2 3

Appendix D: Theory of Planned Behaviour

Questionnaire section 3:

Please answer each of the following questions by choosing the number that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different issues. Please read each question carefully and remember there are no right or wrong answers.

1. For me the experience of having a smear test would be:

harmful :__1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : beneficial

bad : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : good

unpleasant : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : pleasant

worthless : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Useful

2. For me to experience an uncomfortable smear test would be:

Extremely undesirable : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Extremely desirable

Unlikely : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Likely

3. For me to experience anxiety about the outcome after a smear test would be:

Extremely undesirable : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Extremely desirable

Unlikely : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Likely

4. For me to experience embarrassment during a smear test would be:

Extremely undesirable : __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Extremely desirable

Unlikely :__1__:_2__:_3__:_4__:_5__:_6__:_7__: Likely

5. For me to recognise the importance of having a smear test would be:

Extremely :__1__:_2__:_3__:_4__:_5__:_6__:_7__: Extremely
undesirable desirable

Unlikely :__1__:_2__:_3__:_4__:_5__:_6__:_7__: Likely

6. For me to go for a smear test when experiencing related symptoms would be:

Extremely :__1__:_2__:_3__:_4__:_5__:_6__:_7__: Extremely
undesirable desirable

Unlikely :__1__:_2__:_3__:_4__:_5__:_6__:_7__: Likely

7. Most people who are important to me think that..... go for regular smear tests

I should :__1__:_2__:_3__:_4__:_5__:_6__:_7__: I should
not

8. It is expected of me that I go for regular smear tests

Strongly agree :__1__:_2__:_3__:_4__:_5__:_6__:_7__: Strongly disagree

9. I feel under social pressure to go for regular smear tests

Strongly agree :__1__:_2__:_3__:_4__:_5__:_6__:_7__: Strongly disagree

10. People who are important to me want me to go for regular smear tests

Strongly agree :__1__:_2__:_3__:_4__:_5__:_6__:_7__: Strongly disagree

11. My family thinks that..... go for a smear test

I should :__1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : I should
not

Is their approval important to you?

Not at all :__1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Very
much

12. My closest friend thinks that..... go for regular smear tests

I should :__1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : I should
not

Is their approval important to you?

Not at all :__1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Very
much

13. My doctor thinks that..... go for regular smear tests

I should :__1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : I should
not

Is their approval important to you?

Not at all :__1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Very
much

14. I want to go to my next smear test

Strongly agree: __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Strongly disagree

15. I will make an appointment to go to my next smear test

Strongly agree: __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : Strongly disagree

16. I intend on scheduling and attending all my future smear appointments until I'm discharged from screening

Strongly agree: __1__: __2__: __3__: __4__: __5__: __6__: __7__: Strongly disagree

17. I am confident that I could go for regular smear tests

Strongly agree : __1__: __2__: __3__: __4__: __5__: __6__: __7__: Strongly disagree

18. For me to go to regular smear tests would be:

Easy : __1__: __2__: __3__: __4__: __5__: __6__: __7__: Difficult

19. Whether or not I go to regular smear tests is entirely up to me

Strongly agree : __1__: __2__: __3__: __4__: __5__: __6__: __7__: Strongly disagree

20. I have very little power over my ability to go to regular smear tests

Strongly agree: __1__: __2__: __3__: __4__: __5__: __6__: __7__: Strongly disagree

21. If I encountered unanticipated events that placed demands on my time, it would make it more difficult for me to go to my smear test

strongly agree: __1__: __2__: __3__: __4__: __5__: __6__: __7__: strongly disagree

How often do you encounter unanticipated events that place demands on your time?

very rarely: __1__: __2__: __3__: __4__: __5__: __6__: __7__: very frequently

22. If I felt tired, it would make it more difficult for me to go to my smear test.

strongly agree: __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : strongly disagree

How often do you feel tired or have no energy?

very rarely: __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : very frequently

23. If I had family (partner/kids/parents etc) obligations that placed unanticipated demands on my time, it would make it more difficult for me to for me to go to my smear test.

strongly agree: __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : strongly disagree

How often do family (partner/kids/parents etc) obligations place unanticipated demands on your time?

very rarely: __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : very frequently

24. If work or employers placed unanticipated demands on my time, it would make it more difficult for me to for me to go to my smear test.

strongly agree: __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : strongly disagree

How often does your work/employers place unanticipated demands on your time?

very rarely: __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : very frequently

25. If other recreational/social responsibilities placed heavy demands on my time, it would make it more difficult for me to for me to go to my smear test.

strongly agree: __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : strongly disagree

How often do other recreational/social responsibilities place demands on your time?

very rarely: __1__ : __2__ : __3__ : __4__ : __5__ : __6__ : __7__ : very frequently

Appendix E: Debrief sheet

END OF QUESTIONNAIRE!!

Thank you for taking the time to complete this questionnaire. If you have been affected by any of the issues raised in this research study, please contact your local GP or avail of the numbers listed below. if you wish to obtain the results of this research study, please contact the researcher on .

- Cervical Check: 1800 45 45 55, info@cervicalcheck.ie
- Aware: 1800 80 48 48, supportmail@aware.ie
- Samaritans: 116 123, jo@samaritans.ie