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ANALYTIC HIERARCHY PROCESS

for eliciting colorectal cancer screening preferences

IN AN ONLINE QUESTIONNAIRE

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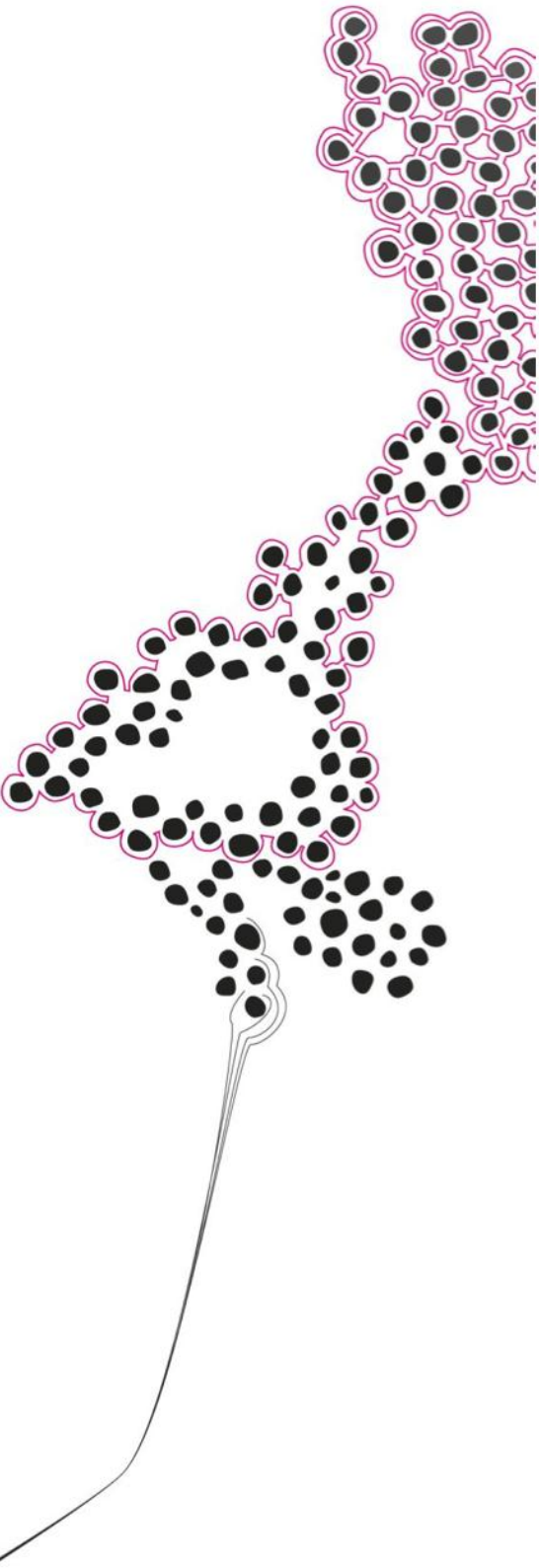

Validating the ANALYTIC HIERARCHY PROCESS for eliciting colorectal cancer screening preferences IN AN ONLINE QUESTIONNAIRE

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ABSTRACT

Background

The expected impact of screening on health-related quality of life influences peoples' decision to participate in screening programs. In addition, factors like risks and discomfort associated with the screening determine individuals' attendance of the test. To maximise the participation and hence the net benefit of a screening program for colorectal cancer, it is important to know the preferences of the screening population on different screening methods.

Objective

The objective of this study was to validate the Analytic Hierarchy Process (AHP) in measuring patient preferences for colorectal cancer screening in an online survey and to explore to what extent AHP can be used to predict the impact of offering different screening technologies on screening attendance.

Study population

Dutch men and women aged 55 to 75 years. Excluded are people who already have or had colorectal cancer or a colon infection and people who are already in a colorectal cancer check-up program or people have been advised to do so.

Methods

Respondents were asked to fill in a web-based questionnaire consisting of four different scales to measure their colorectal cancer screening preferences: (1) the AHP questions, (2) questions about the intention to attend the screening, (3) a question about the direct ranking of the screening methods and (4) a quality of life rating scale. The AHP model consists of four main criteria: sensitivity, specificity, safety and burden (which consists of the two sub criteria inconvenience and frequency). Four alternatives are included: iFOBT, Colonoscopy, Sigmoidoscopy and Virtual Colonoscopy.

Results

650 of the 1542 respondents filled in the questionnaire, of which 167 were consistent in their answers on the AHP questions. The most preferred screening methods were iFOBT and Virtual Colonoscopy which is measured with all four scales. From the data, however, it seemed that the respondents to the online AHP survey were not able to judge clinical traits as sensitivity, specificity and safety (i.e. risks) in accordance with the risk information provided. When comparing the AHP scale with the other scales, it correlates best with direct ranking scale. When comparing the intention to attend scale with the other scales, it correlates the worst with AHP.

Conclusion

The Analytic Hierarchy Process can be used in an online questionnaire to measure patient preferences for colorectal cancer but it seems only partially valid, depending on which criteria are used in the AHP model. That is, it appears not valid for measuring clinical traits like sensitivity, specificity and safety or risks. On the other hand the correlations show us that when comparing the intention to attend scale with the other scales, it correlates the worst with AHP. Therefore it is questionable if AHP is the best way to predict impact of offering different screening technologies on screening attendance. However, predicting the intention to attend (or the actual attendance) and eliciting preferences is not the same thing. Hence the AHP model should be adjusted for this by selecting different criteria. When this is done, AHP has potential to be a good predictor for the intention to attend or the actual attendance.

1. INTRODUCTION

Colorectal cancer is cancer that forms in the tissues of the colon or rectum. In the Netherlands, incidence measured in Age Standardised Rate (ASR, European Standard) is estimated to be 65,1 for men and 46,2 for women per 100.000 persons per year. Mortality is estimated to be 26,0 ASRs for men and 18,5 ASRs for women per 100.000 persons per year [1]. This means that every year over 11.000 people in The Netherlands get to hear that they have colorectal cancer, and that every year almost 5.000 people die from this disease. This makes colorectal cancer the third most common cancer for man (after prostate and lung cancer) and the second most common cancer for women (after breast cancer) [1].

Frequently colorectal cancer begins in the cells that make and release mucus and other fluid and it is therefore categorized as an adenocarcinoma [2]. A common symptom is a change in bowel habits. This can manifest in several ways, for example having diarrhoea or constipation, finding blood in the stool and feeling that the bowel does not empty completely. Colorectal cancer can be described in stages. In Stage 0 the cancer is found only in the innermost lining of the colon or rectum. This type is also known as carcinoma in situ. In Stage I the tumour has grown into the inner wall of the colon or rectum, but still not through the wall. This happens in Stage II where the tumour extends more deeply into and through this wall. Nearby tissue may have been invaded but the cancer cells have not reached the lymph nodes yet. In stage III the cancer has spread to the local lymph nodes, and in stage IV other parts of the body are also reached [3].

The prognosis of colorectal cancer depends on the stage in which it is detected. A Dutch study [4] shows that the five-year survival rate for stage I is 95% (92%-98%), for stage II 74% (71%-76%), for stage III 51% (48%-54%), for stage IV 4% (3%-5%) and 36% when the stage is unknown. This clearly shows that early detection of colorectal cancer is very important.

Screening or early disease detection aims at discovering latent pathological change, and allows to treat this before the disease has reached a stage at which it already poses a threat to the individual. Mass screening is the large-scale screening of a whole population group, without selecting specific individuals [5]. When the word ‘screening’ is used in this paper, it will refer to mass screening. There are many different screening methods. Most of them are cost-effective compared to no screening, though there is no single optimal screening method [6, 7]. Most common methods are the guaiac Fecal Occult Blood Test (gFOBT), the Sigmoidoscopy, the Colonoscopy and the Double Contrast Barium Enema (DCBE). Newer methods are the immunochemical Fecal Occult Blood Test (iFOBT), the Virtual Colonoscopy (also known as CT Colonography) and the Fecal (or Stool) DNA Test. An emerging method is the Capsule Endoscopy (also known as the nanopill). For a short description of these methods see BOX1 below. [6-8]

BOX1: Colorectal Cancer screening methods

The Fecal Occult Bloods Test (FOBT) checks for hidden blood in fecal material (stool). The **guaiac FOBT** uses the chemical guaiac to detect heme (from haemoglobin in blood). The **immunochemical FOBT** uses antibodies to detect the human haemoglobin protein. [9]

Another variant is the **Fecal (or Stool) DNA test.** This test is not based on finding (indicators of) blood, but on finding several tumor-related DNA changes in cells shed from colonic neoplastic lesions into the bowel contents. [10]

With a **Sigmoidoscopy** the rectum and lower colon are examined with a lighted instrument (sigmoidoscope) for precancerous and cancerous growths. During the procedure it is possible to remove them or to do a biopsy. [9]

With the **Colonoscopy** it is possible to examine the entire colon in addition to the rectum and lower colon with a sigmoidoscopy. The sigmoidoscope is replaced for a colonoscope and it is still possible to remove growths and performing a biopsy. [9]

The **Virtual Colonoscopy (or Computerized Tomographic (CT) Colonography)** uses x-ray equipment to produce pictures of the rectum and colon. A computer is used to assemble these pictures into detailed images so that polyps and other abnormalities can be shown. [9]

The **Double Contrast Barium Enema (DCBE)** uses x-rays as well. The patient is given an enema with a barium solution and air is introduced into the colon to help outline the colon and rectum on the x-rays. [9]

Colon Capsule Endoscopy / Video Capsule Endoscopy is a relatively new method. The Colon Capsule Endoscopy is an ingestible capsule which is equipped with an endoscope that has two imagers. This way it is able to acquire video images from both ends. [11]

The **Nanopill** is a screening method of the future. It is an ingestible pill with microscopic wires which can detect DNA fragments long before any tumour becomes visible. The collected data will be transmitted wireless to the doctor and the pill can pass through the body as normal. [12]

1.1 PROBLEM DESCRIPTION

The target of a screening program is a population which appears healthy and therefore screening should only be implemented if potential benefits outweigh the potential harm [6]. In 2009, The Health Council in the Netherlands has recommended adding screening with the immunochemical Fecal Occult Blood Test to the national health program [13]. The health gains are estimated on 1400 lives saved per year and this is likely to weigh up against the additional costs of screening. In many countries, however, the actual attendance at colorectal cancer screening by the population remains poor [6-8, 13]. Cost-effectiveness is clearly not the sole determinant for success of national screening programs as several studies show [7, 8, 14-17]. Expected impact of screening on health-related quality of life influences peoples' decision to participate in screening programs. In addition, factors like risks and discomfort associated with the screening determine individuals' attendance of the test. Herewith, individual preferences for screening with a specific test co-determine the net benefit of colorectal screening for the population. To maximise the participation and hence the net benefit, it is important to know the preferences of the screening population.

Saaty's Analytic Hierarchy Process (AHP) is a multi-criteria decision analysis technique and can be applied to obtain the preferences of the screening methods based on several criteria instead of only some sort of overall preference. An AHP analysis starts with making a conceptual representation of the decision. This consists of the goal which is to be achieved, the alternatives being evaluated and the criteria to value these alternatives. After that, a comparison is made to determine the relative priorities of the criteria in meeting the goal. Next is the relative scoring of the several alternatives on the criteria. In our case, both the comparison and scoring is done by the respondents of the questionnaire. Results are then combined to determine which alternative meets the goal best. [18]

The AHP is a validated Multi Criteria Decision Analysis technique for the elicitation of preferences and is selected for this study because (1) it is flexible as there are different formats available; (2) it is easy to use for the respondents due to the pairwise comparisons; and (3) the mathematics behind the analysis are theoretically justified and assumption free [19]. Though it is pretty easy in use, we question if the AHP can be used to elicit colorectal cancer screening preferences using an online questionnaire where there is no room for personal assistance and feedback. Since the AHP method is not founded in the utility theory, it is useful to check this with a validated quality of life scale. Also, were we are curious if the AHP can be used to measure the influence of offering different screening techniques on screening attendance.

1.2 OBJECTIVE

The objective of this study is to validate the Analytic Hierarchy Process in measuring patient preferences for colorectal cancer screening in an online survey and to explore to what extent AHP can be used to predict the impact of offering different screening technologies on screening attendance.

1.3 RESEARCH QUESTION

Which colorectal cancer screening method is preferred by a general Dutch population of men and women aged 55-75 years, can this be measured validly using the Analytic Hierarchy Process in an online questionnaire and could the Analytic Hierarchy Process be used to predict the impact of offering different screening techniques on screening attendance?

Sub questions:

- Which colorectal cancer screening method is preferred when measured with the Analytic Hierarchy Process?
- Which colorectal cancer screening method is preferred when measured with a direct ranking method?
- Which colorectal cancer screening method is preferred when measured in expected impact on quality of life with a rating scale?
- Which colorectal cancer screening method is preferred when measured with questions about the intention to attend the screening?
- To what extent are respondents' preferences comparable across the methods used?
- Is the Analytic Hierarchy Process in an online questionnaire valid to measure patient preferences for colorectal cancer screening?
- To what extent can the Analytic Hierarchy Process be used to predict the impact of offering different screening techniques on screening attendance?

2. METHODS

This section describes the study population first, followed by the research design and the construction of the Analytic Hierarchy Process analysis.

2.1 STUDY POPULATION

The recent advice of the Dutch Health Council on colorectal cancer screening [13] aims for screening a general population of both men and women aged 55 to 75 years. People who are already in a colorectal cancer check-up program are excluded from this. Following this, our study population will also be Dutch men and women aged 55 to 75 years. Excluded from filling in the questionnaire are people who already have or had colorectal cancer or a colon infection (like Crohn colites) since they are most likely already in a check-up program and will therefore not be invited for a mass-screening program [13]. Also, they already have some experience with the screening methods which will be a great influence in their judgement of the screening methods. Their preferences could therefore be different from our target group. For this same reason, also people who are already in a colorectal cancer check-up program (which could be for a different reason than colorectal cancer or a colon infection) or have been advised to do so, are excluded from this study.

An online web-based questionnaire is set-out, using Survey Monkey [20]. The questionnaire was first tested with a select group of fifteen people. The pilot was split up in three rounds of approximately five persons each. Feedback was processed between the rounds to maximize the usefulness of the pilot. After the pilot, the actual respondents were gathered by a specialised organisation (Survey Sampling International [21]) to reach enough respondents randomly. Data on age, gender and education is provided by Survey Sampling International which can be used to do a rough check on generalizability.

2.2 RESEARCH DESIGN

As mentioned before, data about the patient preferences for different screening methods is obtained by an online questionnaire. This questionnaire consists of five parts:

- Introduction
- The AHP questions
- Questions about the intention to attend the screening
- A question about the direct ranking the screening methods
- Quality of Life rating scale
- On the last page a box is included to give the respondents the opportunity to leave a comment.

All questions (except the comment box at the end) require an answer to continue with the questionnaire. This is done because there is a reasonable chance that respondents forget a

part of the AHP questions accidently. By calculating the inconsistency ratio for each respondent separately it is possible to exclude respondents who are inconsistent. Respondents will be excluded from the questionnaire if their inconsistency ratio is greater than 0,3 or if their answers show the following strange patterns: filling in the same values or filling them in the same order in at least five of the six groups of comparison because those answers are unrealistic. For example when everywhere a '2' is filled in or an order like '-9,-9,1,1,9,9' for every criterion. Often these patterns are picked up by the inconsistency ratio, but not always, for example when the filled in values are low like 2 or 1.

QUESTIONNAIRE INTRODUCTION

The questionnaire starts with a short introduction and two questions to exclude respondents who already have or had colorectal cancer or a colon infection and respondents who are already in a colorectal cancer screening program or have been advised to do so. After these questions the respondents see an explanation about answering the AHP questions and an example question to illustrate this.

Then, the screening methods are presented with a short summary of one sentence. This summary can also be found at the bottom of each page to support the respondents in their decision making. The questionnaire is constructed in such a way that respondent obtains the information about the several screening procedures step by step. They don't have to process all this information at once.

AHP QUESTIONS

First, the respondents have to indicate their preferences for the screening methods on each criterion following the provided information which is needed to make that decision. This information contains a description of the reviewed criterion and the characteristics of each screening method on this criterion. An example of these questions is: "Which screening method do you prefer with respect to inconvenience and to what degree?"

Second, they have to indicate which criteria they think are most important. The descriptions of the criteria are presented again and now all information is provided. An example of these questions is: "Which criterion do you think is more important when choosing a screening method and to what degree?"

INTENTION TO ATTEND

After completing the AHP questions, the respondents are asked to indicate if they think they will come for a free screening when invited by the government, for example: "Pretend you have been invited for a free colorectal cancer screening with a colonoscopy. Do you intent to participate?" They have to indicate this for each screening method separately on a 5-point

scale. This scale is common to measure intention to attend at a screening [22] and consists of 5 points ranging from -2 to 2:

-2 = Definitely not
-1 = Probably not
0 = Perhaps yes / perhaps not
1 = Probably yes
2 = Definitely yes

This is the first time the respondents need to combine all the information to make a decision.

RANKING THE SCREENING METHODS

Next, they simply have to rank the screening methods from No. 1 to No. 4. They are asked: "Which screening method do you think is the best one? Please select below every method if that method is on rank 1, 2, 3 or 4. Herewith, number 1 is best and number 4 is worst." This question should be the easiest to understand and gives a simple control measure when comparing with the AHP scores.

QUALITY OF LIFE RATING SCALE

The respondents will also be asked for the expected relative disutility associated with each screening method. This can be done for example by using Standard (reference) Gamble or Time Trade-Off questions. Standard gamble could be hard for the respondents to perform without thorough guidance. It is also known to make some people feel uncomfortable because they are to gamble with death. Last, it is also influenced by risk attitude. Time Trade-Off is easier to perform and is not influenced by risk attitude, though it could also make people feel uncomfortable because they are to gamble with length of life. This makes it is likely that Standard Gamble and Time Trade-Off won't be very sensitive for differences in expected disutility [23, 24]

Another and in this case more sensitive option is a rating scale (like a feeling thermometer). This is much easier to fill in for the respondents, but the problem lies in its validity because it is not ratio scaled. This won't be such a problem since we want to measure the disutilities relative to each other [23, 24]. The Rating Scale is therefore more suited for the purpose of this study. Following this, respondents are asked to give an estimation of their quality of life at this moment, using a rating scale from 0 to 100. After that, they have to imagine what their quality of life would be when they would participate the screening. This has to be indicated for each screening method separately. For example they are asked: "What do you think your quality of life would be if you participated the screening with a Sigmoidoscopy?"

The questionnaire can be found in Appendix 1.

2.3 TECHNIQUES FOR DATA ANALYSIS

Paired samples t-tests are used to check if the screening methods score significantly different from each other. Correlations are used to check if the respondents are consistent in their answers between the different scales.

The correlation between the intention to attend and direct ranking scales can be represented Kendall's tau-c since both scales are not interval or ratio scaled (otherwise the Pearson or Spearman correlation could be used). The correlation between the impact on quality of life and intention to attend scales can be represented by the Spearman correlation since the intention to attend scale is not interval or ratio scaled (otherwise the Pearson correlation could be used). The correlation between the impact on quality of life and direct ranking scales can be represented by the Spearman correlation since the ranking scale is not interval or ratio scaled.

The correlation between AHP and the intention to attend scale can be represented by the Spearman correlation since the intention to attend scale is not interval or ratio scaled. The same applies for the correlation between AHP and the direct ranking scale. The correlation between AHP and impact on quality of life can be represented by the Pearson correlation since both scales are at least interval scaled. The Pearson correlation only presumes a linear relation, so the Spearman correlation is also used to discover a relation if there is perhaps different relation than a linear one.

It is expected that if a screening method scores well on one scale, it will also score well on the other. The previous correlations can be used to represent this. The problem is that this method is sensitive to noise caused by other unknown external variables. For example: some people indicate they will or will not go to a screening despite of the screening methods offered. Another method to check if the AHP scale correlates well with the other scales is by measuring the correlation between the difference in the scores of two screening methods on one scale and the differences between the scores on the other scale. This is also done to see which scale correlates best with the intention to attend scale.

2.4 CONSTRUCTION OF THE AHP-ANALYSIS

As mentioned before, the AHP analysis starts with making the conceptual representation of the decision. A goal needs to be set, the alternatives being evaluated need to be chosen and the criteria to value these alternatives need to be formulated.

THE GOAL OF THE AHP ANALYSIS

Elicitation of colorectal cancer screening preferences to identify screening techniques for a national screening program in The Netherlands.

THE ALTERNATIVES

There are ten alternatives which could be included in the AHP-analysis.

- GFOBT
- IFOBT
- Fecal DNA testing
- Sigmoidoscopy
- Colonoscopy
- Barium Enema
- Virtual Colonography
- Capsule Endoscopy
- Nanopill
- No screening

Though, including all nine alternatives would make the AHP-model too large and the questionnaire too long. A maximum of seven alternatives is common, but only five will be selected in a pre-analysis on dominance (cost-effectiveness) and relevance for a Dutch screening program to make the AHP-model and especially the questionnaire more compact.

IFOBT dominates gFOBT because only one sample is needed and reading the result can be automated. This has a positive effect on both quality and costs. IFOBT is therefore both more effective and more efficient than gFOBT. [13] The Fecal DNA test is also inferior to iFOBT, because it is estimated less life-years at higher cost [6]. Adding Fecal DNA testing to the list of alternatives would not have much value when iFOBT is already included, also because the actual screening is performed the same way (by faeces).

Mass screening with a Sigmoidoscopy or Colonoscopy will lay huge burden on the capacity of Sigmoidoscopy or Colonoscopy respectively. It is therefore unlikely that it can be used for mass screening of the whole Dutch population. Though, capacity could be extended in the future. On top of that, Colonoscopy is seen as the golden standard and therefore it is interesting to include it in the AHP analysis. Sigmoidoscopy is not seen as the golden standard, but is shown highly effective in several case-control studies. For that reason, it is included as well. [10, 13]

The Barium Enema and Virtual Colonoscopy are both diagnostic imaging methods, but the Virtual Colonoscopy gets much more attention in the literature. This is probably because the Barium Enema is inferior to Colonoscopy and Virtual Colonoscopy [25]. Discomfort experienced is probably similar [10]. Therefore the Barium Enema is excluded from the AHP analysis. The Virtual Colonoscopy is seen as a promising additional approach for the future; though it needs to be developed further and more randomised trials are needed to determine its effectiveness properly. Because it has potential for the future, it is included in the AHP analysis. [26, 27]

Capsule Endoscopy is a totally different way of colorectal cancer screening. It is a new method and much is still unclear, but it is a promising but expensive alternative [6]. However, this technique is still under development and data on its effectiveness is very

scarce and probably not representative when introduced for mass-screening. Therefore it is not feasible to include the Capsule Endoscopy.

Last, the alternative no screening will not be include because this alternative is not comparable on the selected performance criteria (see below).

The final list of alternatives being evaluated:

- IFOBT
- Colonoscopy
- Sigmoidoscopy
- Virtual Colonoscopy

THE SELECTION CRITERIA

A literature search containing the "Analytic Hierarchy Process" and "colorectal cancer screening" identified three authors on this subject: Deborah Marshall et al., James Dolan and Yuichi Katsumura et al. Bruce Ling did not use the Analytic Hierarchy Process, but wrote an interesting and useful article on colorectal cancer screening patient preferences. These articles are used to inquire criteria that can be used in our AHP model.

Marshall et al. [8] used Focused groups to define five screening attributes:

1. Process: How is it done?
2. Pain: Is there pain or discomfort?
3. Preparation: What do you do to prepare?
4. Sensitivity: Is it accurate if you DO have cancer?
5. Specificity: Is it accurate if you DO NOT have cancer?

Dolan [7] used three decision criteria and one cluster of three other criteria:

1. Avoid colorectal cancer: Chances of avoiding colorectal cancer in the future.
2. Avoid side-effects: Chances of having no side-effects, including only two big problems: intestinal perforation and bleeding that that is serious enough to require a blood transfusion and observation in the hospital.
3. Avoid false positives: Chances on a false alarm.
4. Cluster of other considerations
    i. Number of tests: The number of times you are screened if you follow the screening programme from now until you are 80.
    ii. Preparation: What you need to do to prepare for the test.
    iii. Procedure: What the tests themselves are like.

Katsumura et al. [16] used three main criteria and split them in two sub criteria:

1. Effectiveness
    i. mortality reduction rate
    ii. cancer detection rate
2. Costs
    i. out-of-pocket payment
    ii. time cost
3. Disadvantages
    i. false positives/negatives
    ii. risks

Link et al. [15] did not use the Analytic Hierarchy process but used seven screening test features:

1. Frequency: How often the test is recommended to be performed.
2. Discomfort: Potential unpleasant effect from the test.
3. Complications: Potential adverse events from the test.
4. Inconvenience: Things a patient needs to do in preparing the test.
5. Time: How long it takes to perform the test.
6. Accuracy: How effective the test is in ultimately detecting a cancer or polyp if present.
7. Further testing: If screening test is positive, what diagnostic procedure is needed?

Table 1 gives an overview of these criteria and the corresponding criteria which are used in this study. Sort like criteria are places on the same row. The criteria on the first three rows overlap because preparation and time could be seen as part of the process, and the pain and discomfort experienced is a direct effect of the preparation and the process. It is therefore possible that people judge the process by the amount of pain expected. Because this could harm the power of the AHP analysis, process, time, preparation and pain are taken together as one criterion: inconvenience. This word pretty most covers all these factors.

Sensitivity and specificity both represent the accuracy of the test. Sensitivity says something about the chance to avoid colorectal cancer and avoid avoiding false negative results. Specificity says something about the chance on a false positive results and hence the chance to go for an unnecessary additional test causing extra anxiety. Both are import and included in the AHP analysis. However, these criteria are potentially difficult to understand for the respondents. It is therefore important to give a clear description of these criteria and avoid using the words sensitivity and specificity in the questionnaire.

The next criterion, avoid side-effects, can also be referred to as complications or risks. To make it easier for the respondents to rate the screening methods on this criterion, the word ‘safety’ is chosen. Respondents than can give the highest score to the most safe screening method instead of giving the highest score to the screening method with the least chances on complications, which is kind of a reversed scale.

The frequency of the tests is also valued important and is included in the AHP analysis. Feedback from a test panel learned that some respondents don't see inconvenience and frequency as two independent criteria. As this should be the case for a strong AHP model, we made them both sub criteria of a new criterion: burden. Because independency of criteria is mainly important on the first level of the hierarchy and to a lesser extent in a sub level of the hierarchy, this change enhances the strength of the AHP model.

The next two criteria are not included in this study. The mortality reduction rate and avoid CRC is interdependent with at least sensitivity. Also it is not a characteristic of the screening methods but an outcome in itself. The other criterion, costs consists of out-of-pocket payment and time costs. Out-of-pocket payment is most likely not of much relevance in the Netherlands due to the insurance system. Time cost is be more relevant but the main criteria costs only got a very low priority which makes it less relevant. The last criterion, further testing, is related to the specificity since it represents part of the impact of a false positive result. It is therefore included in the criterion specificity.

Table 1: Overview of the mentioned criteria

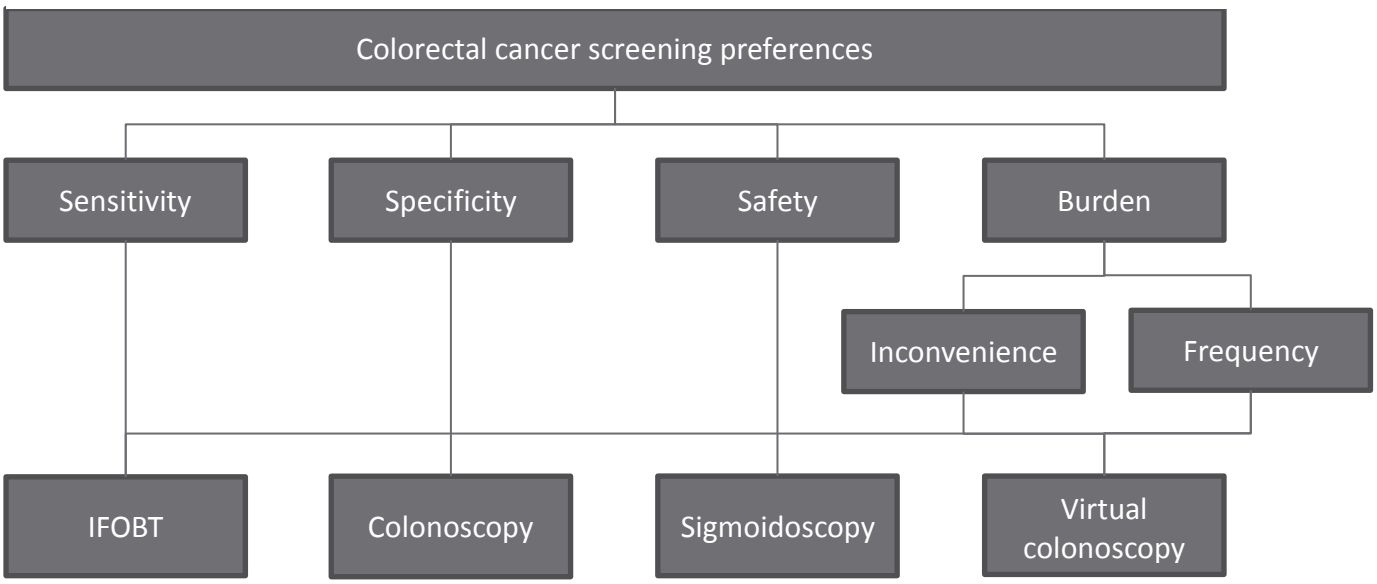
Marshall	**Dolan**	**Katsumura**	**Link**	**Mulder**
Process	Procedure		Time	*Inconvenience*
Pain			Discomfort	*Inconvenience*
Preparation	Preparation		Inconvenience from preparation	*Inconvenience*
Sensitivity		Cancer detection rate / Avoid false negatives	Accuracy	*Sensitivity*
Specificity	Avoid false positives	Avoid False positives	Accuracy	*Specificity*
	Avoid side-effects	Avoid Risks / Complications	Complications	*Safety*
	Number of tests		Frequency	*Frequency*
	Avoid CRC	Mortality reduction rate		-
		Costs		-
			Further testing	*Specificity*

The final list of criteria is presented below with a short description of each criterion. These together with the selected alternatives are used to conduct the AHP questionnaire where pairwise comparisons are made. Figure 1 shows the decision-making model.

Final list of criteria:

1. **Sensitivity**: If people DO have pathological changes indicating colorectal cancer, the tests should give as few as possible false negative results; otherwise it just misses its purpose. This could be presented as the sensitivity of the test.
2. **Specificity**: If people do NOT have pathological changes indicating colorectal cancer, the tests should give as few as possible false positive results; otherwise there will be unnecessary follow-up and anxiety for patients. This could be presented as the specificity of the test.
3. **Safety**: Will there be any side-effect and what are the chances on complications?
4. **Burden**
    - ***Inconvenience***: How is the procedure like? Do you need to prepare something? How long does it take? Will the test be discomfortable? Or is there even pain?
    - ***Frequency***: How often is the test recommended to be performed? In other words: what is the number of tests needed from now until you reach the age of 80 years?

Figure 1: AHP decision-making model



3. RESULTS

A total of 1542 questionnaires were sent and the response was 96,9% (1494 respondents). Demographic data on the non-response group is not available. 210 (14,1%) of the 1494 respondents did not meet the selection criteria. From this 210, 137 respondents have or had colorectal cancer or colon/rectal infection and 73 are already been advise to follow a colorectal cancer screening program. Of the 1284 respondents who did meet the selection criteria, 650 respondents (50,6%) completed the whole questionnaire. Of these 650 respondents, 167 respondents (25,7%) were consistent in their answers; 483 respondents (74,3%) were inconsistent. Their answers on the AHP analysis were not consistent enough (Consistency ratio >0,30) or showed strange patterns (as explained before). These respondents are excluded from the analysis. Hence, 167 respondents are included in the analysis.

62% of these 167 respondents is male and 38% female. The mean age is 62,9 years and ranges from 55 to 75. Also educational information was available using the Dutch system. Three respondents (1,8%) have completed LO which is comparable to junior school. 25 respondents (15%) have completed LBO, 27 (26,2%) MAO, 31 (18,6%) MBO and 15 (9%) HAO, which are all more or less comparable to comprehensive school (in total 58,7%). 54 respondents (32,2%) have completed HBO, which is comparable to a Bachelor's degree. 12 (7,2%) have completed WO, which is comparable to a Master's degree. Data on all 1494 respondents indicates that the incompletes are not age related. However, looking at education levels (available for 1487 of 1494 respondents (99,5%)), a relative larger part of the respondents with lower educational levels did not complete the questionnaire, ranging from 58% for the lowest level to 31% for the highest level. Nevertheless, they were generally equally consistent in their answers as respondents with higher educational levels. In addition, a relatively larger part of the women was inconsistent (30% for men and 35% for women), hence a relatively larger part of men was included (12,4% for men and 9,6% for women). See Appendix 2 for a more detailed overview of this.

3.1 ANALYTIC HIERARCHY PROCESS

Table 2 summarises the AHP scores. On the left side one can see that all weights are almost identical, which means that the criteria are nearly equally important to the respondents. The priorities next to this show that Virtual Colonoscopy scores best on all of the criteria except to the criterion Inconvenience; here scores iFOBT best. The final scores are computed by combining these preferences and priorities where the priorities function as weighting factors. Due to rounding they sum to 1.01 instead of 1. These final scores show us that the respondents favour Virtual Colonoscopy mostly, followed by iFOBT, Colonoscopy and Sigmoidoscopy. A paired samples t-test (see Appendix 3) clarifies that all scores are

significantly different from each other when taking 95C% CI. With a 99% CI only the difference between the scores of Colonoscopy and Sigmoidoscopy is not significant.

Table 2: AHP scores

	weight	iFOBT	Colonoscopy	Sigmoidoscopy	Virtual Colonoscopy
Sensitivity	0,26	0,19	0,27	0,14	**0,40**
Specificity	0,24	0,23	0,23	0,22	**0,31**
Safety	0,26	0,32	0,16	0,17	**0,35**
Burden	0,24	-	-	-	-
∟ ***Inconvenience***	*0,45*	**0,38**	0,16	0,16	0,31
∟ ***Frequency***	*0,55*	0,32	0,18	0,18	**0,33**
FINAL AHP SCORE		**0,26**	**0,22**	**0,17**	**0,36**

3.2 DIRECT RANKING

The respondents were asked to directly rank the screening methods. Table 3 gives an overview of how many times a screening method is assigned to a certain rank. Overall scores can be calculated when giving rank 1 a weight 4, rank 2 a weight of 3, rank 3 a weight of 2 and rank 4 a weight of 1. These show that respondents prefer iFOBT, followed by Virtual Colonoscopy, Colonoscopy and Sigmoidoscopy.

Table 3: Direct ranking, frequencies

	Rank 1	Rank 2	Rank 3	Rank 4	Score
iFOBT	84	35	19	29	508
Colonoscopy	15	48	68	36	376
Sigmoidoscopy	5	26	61	75	295
Virtual Colonoscopy	63	58	19	27	491

Table 4 shows the average scores of the ranks. They also indicate which screening method is mostly preferred: the lower the mean, the more the respondents like that screening method. These averages show us again that the respondents favour iFOBT mostly, followed by Virtual Colonoscopy, Colonoscopy and Sigmoidoscopy.

Table 4: Direct ranking, average scores

Descriptive Statistics

	N	Mean	Std. Deviation
Rank iFOBT	167	1,96	1,148
Rank Colonoscopy	167	2,75	,897
Rank Sigmoidoscopy	167	3,23	,821
Rank Virtual Colonoscopy	167	2,06	1,068

2,5 is the middle of the 4-point scale (1-2-3-4). If respondents were indifferent to what screening option they most like, the average score would be 2,5. Therefore a t-test can determine if the choices are significantly different from 2,5. A One-Sample T-Test shows that all these means are significantly different from 2,5 at a 95% CI and 99% CI. A paired samples t-test clarifies that all scores are significantly different from each other when taking 95C% CI or 99% CI, except the difference between the scores of iFOBT and Virtual Colonoscopy is not significant. This means that the respondents favour both iFOBT and Virtual Colonoscopy, followed by Colonoscopy and Sigmoidoscopy when measured with direct ranking. See Appendix 4 for both t-tests.

3.3 IMPACT ON QUALITY OF LIFE

Respondents were asked to give an estimation of their current quality of life, using a rating scale from 0 to 100. After that, they had to imagine what their quality of life would be when they would participate the screening. This had to be indicated for each screening method separately. The impact on quality of life for each screening method is computed by taking difference between the quality of life from that screening method and the current quality of life. Table 5 shows that the drop in quality of life is lowest for iFOBT, followed by Virtual Colonoscopy, Colonoscopy and Sigmoidoscopy.

Table 5: Impact on quality of life

Descriptive Statistics

Impact on quality of life	N	Mean	Std. Deviation
iFOBT	167	-2,2335	9,59226
Colonoscopy	167	-7,2036	15,51351
Sigmoidoscopy	167	-7,4910	15,22873
Virtual Colonoscopy	167	-3,0120	11,23140

A paired samples t-test shows that the impact on quality of life was significantly for all screening methods at 99% CI. Another paired samples t-test shows that the impact on quality of life was not significantly different between iFOBT and Virtual Colonoscopy as well as between Colonoscopy and Sigmoidoscopy. Though, the impact on quality of life was significantly different between iFOBT and Virtual Colonoscopy on the one side and Colonoscopy on the other side. This means that the respondents favour both iFOBT and Virtual Colonoscopy, followed equally by Colonoscopy and Sigmoidoscopy when measured with impact on quality of life. See Appendix 5 for both t-tests.

3.4 INTENTION TO ATTEND THE SCREENING

The respondents had to indicate if they think they would attend the screening on a 5-point scale, ranging from -2 to 2, for each screening method separately. The averages of the ratings in Table 6 show which screening method is mostly preferred: the higher the mean, the more probable they would attend the screening. A paired samples t-test (see appendix 6) clarifies that all scores are significantly different from each other when taking 95C% CI or 99% CI, except the difference between the scores of Colonoscopy and Sigmoidoscopy. This means that when measured with the intention to attend the respondents favour iFOBT mostly, followed by Virtual Colonoscopy. Colonoscopy and Sigmoidoscopy share the 'third place'.

Table 6: Intention to attend

Descriptive Statistics: Intention to attend

	N	Mean	Std. Deviation
Attend iFOBT	167	**,98**	,972
Attend Colonoscopy	167	**,02**	1,032
Attend Sigmoidoscopy	167	**-,03**	1,044
Attend Virtual Colonoscopy	167	**,71**	,996

3.5 OVERVIEW OF THE RESULTS

Ideally would be that all four measuring techniques would result in the same hierarchy of preferences. Table 7 shows that this is the case for 3 of the 4 measuring techniques: intention to attend, direct ranking and quality of life. Only the AHP method shows something different. Herewith the respondents indicate they prefer Virtual Colonoscopy to iFOBT. Note that Colonoscopy and Sigmoidoscopy end both on the third place when measured with intention to attend and impact on quality of life. IFOBT and Virtual Colonoscopy share the first place when measured with direct ranking and quality of life. When this is taken into account then the AHP results are not that different from the other results of the other scales.

Table 7: Overview of preferences

Measuring technique	**1st place**	**2nd place**	**3rd place**	**4th place**
AHP	Virtual Colonoscopy	iFOBT	Colonoscopy	Sigmoidoscopy
Intention to attend	iFOBT	Virtual Colonoscopy	Colonoscopy Sigmoidoscopy	
Direct ranking	iFOBT Virtual Colonoscopy		Colonoscopy	Sigmoidoscopy
Impact on quality of life	iFOBT Virtual Colonoscopy		Colonoscopy Sigmoidoscopy	

To give this a graphical overview, the direct ranking and intention to attend scales are recoded to scales ranging from 0 to 1 and then as the other values recalculated to priorities. Table 8 shows the original scores and Table 9 shows the normalised results.

Table 8: Overview of results

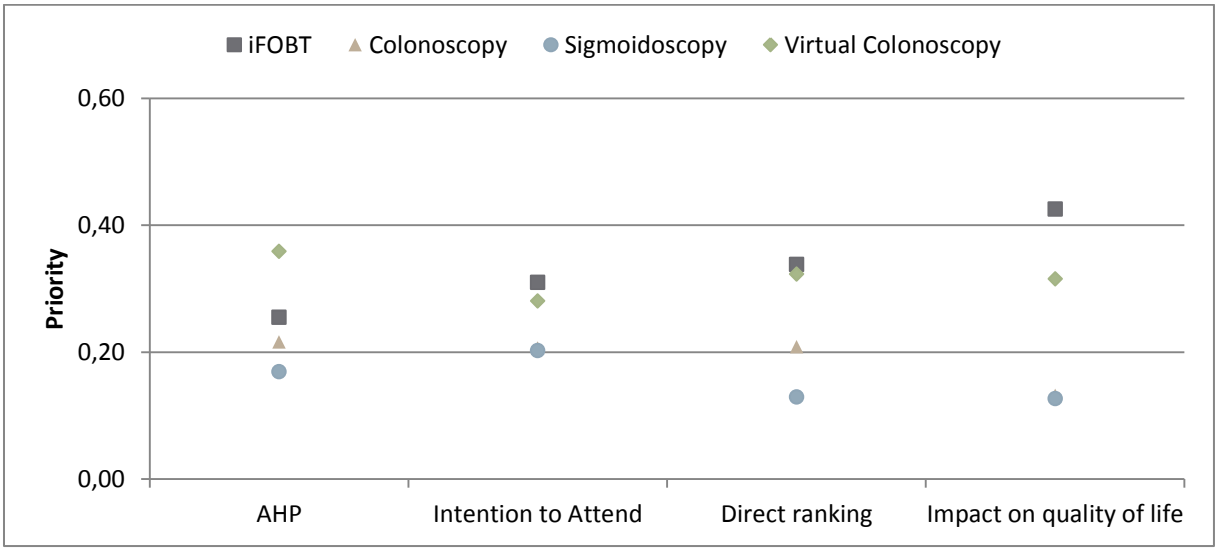
	AHP	Intention to attend	Direct ranking	Impact on quality of life
iFOBT	0,26	0,98	1,96	-2,23
Colonoscopy	0,22	0,02	2,75	-7,20
Sigmoidoscopy	0,17	-0,03	3,23	-7,49
Virtual Colonoscopy	0,36	0,71	2,06	-3,01

Table 9: Overview of results as priorities

	AHP	Intention to attend	Direct ranking	Impact on quality of life
iFOBT	0,26	0,31	0,34	0,426
Colonoscopy	0,22	0,21	0,21	0,132
Sigmoidoscopy	0,17	0,20	0,13	0,127
Virtual Colonoscopy	0,36	0,28	0,32	0,316

Figure 2 shows the graph that is created from the priorities. Generally it shows two clusters, one presenting iFOBT and Virtual Colonoscopy and the other presenting Colonoscopy and Sigmoidoscopy, though the AHP scores are more evenly spread.

Figure 2: Graphical overview of results



3.6 SENSITIVITY ANALYSIS

Preferences measured with AHP did give slightly different results than the results measured with the other scales. However, some of the priority scores for the screening methods on the AHP criteria are rather strange. The score on inconvenience seems logical, but according to the clinical Colonoscopy should get the same score on sensitivity as Virtual Colonoscopy while respondents indicated they favour Virtual Colonoscopy (0,40 vs. 0,27). Also Virtual Colonoscopy should score lower on specificity than Colonoscopy and Sigmoidoscopy, conversely respondents did prefer Virtual Colonoscopy on this (0,31 vs. 0,23 for Colonoscopy and 0,22 for Sigmoidoscopy). Scores on frequency are harder to judge because it is plausible that some people prefer coming more often and other prefer coming less often. Scores on safety are also a bit different than expected: again Virtual Colonoscopy scores best while according to the clinical data iFOBT scores best since there is no chance on complication. It is hard to judge how the complications of Sigmoidoscopy and Colonoscopy (mainly internal bleeding) relate to the complications of Virtual Colonoscopy (allergic reaction and slightly increased chance on cancer). Therefore we follow the respondents answers in this and only switch the priorities of iFOBT (0,32 to 0,35) and Virtual Colonoscopy (0,35 to 0,32).

Table 10 shows the AHP preferences if some more logical scores are given to sensitivity and specificity. This results in a decrease in the priority of Virtual Colonoscopy and an increase in the priority of iFOBT. Both are now equally preferred.

Table 10: Adjusted AHP scores

	weight	iFOBT	Colonoscopy	Sigmoidoscopy	Virtual Colonoscopy
Sensitivity	0,26	0,24	0,28	0,20	**0,28**
Specificity	0,24	0,23	**0,27**	**0,27**	0,23
Safety	0,26	**0,35**	0,16	0,17	0,32
Burden	0,24	-	-	-	-
∟ ***Inconvenience***	*0,45*	**0,38**	0,16	0,16	0,31
∟ ***Frequency***	*0,55*	0,32	0,18	0,18	**0,33**
FINAL AHP SCORE		**0,29**	**0,22**	**0,20**	**0,29**

Moreover, inconvenience and frequency only weight for 0,45 and 0,55 respectively. These criteria could be included as main criteria instead of sub criteria and if then every criterion could be given the same weight (which should not be a problem since the weights are already equal). Yet again the AHP scores do barely change: 0,30 for iFOBT; 0,21 for Colonoscopy; 0,19 for Sigmoidoscopy and 0,29 for Virtual Colonoscopy.

Looking at the other measurement scales, it is not possible to check if the respondents who did not fill in the questionnaire have different preferences, however this is possible for the respondents that have been excluded because their answers on the AHP questions were inconsistent. This was checked by calculating the results the same way as before and

revealed that these results are not substantially different from the original scores. Generally including these respondents also lead to less differentiation between the screening methods. This indicates that the answers are indeed more random. Appendix 7 contains a more detailed description of this.

3.7 CORRELATIONS BETWEEN THE MEASUREMENT SCALES

The results seem to be much alike between the four measurement scales. Correlations are now used to confirm that the AHP method is valid for measuring colorectal cancer screening preferences, but first a summary of the association between the intention to attend, direct ranking and quality of life scales is given. Appendix 8 contains a more detailed description of this.

INTENTION TO ATTEND, DIRECT RANKING AND IMPACT ON QUALITY OF LIFE

The Kendall's tau-c correlation coefficients between the intention to attend and direct ranking scales are, except for iFOBT, significant at 99% CI. They seem low: τ=0,018 for iFOBT, -0,274 for Colonoscopy; -0,255 for Sigmoidoscopy and -0,221 for Virtual Colonoscopy. Though in societal or behavioural research it can be regarded as a meaningful or fair relation [28]. The respondents who give a certain screening method a higher rank (rank 1 is higher than rank 4) do indicate more often that they would probably or definitely attend the screening. For example: 67% of the respondents who rank Colonoscopy as number 1 indicate they will definitely or probably attend the screening while of the respondents who rank colonoscopy as number 4 only 11% indicate this and 84% of the respondents who rank Virtual Colonoscopy as number 1 indicate they will definitely or probably attend the screening while 52% of the respondents who rank colonoscopy as number 4 indicate this. There is however hardly a relation between the ranking of iFOBT and the indication to attend the screening with iFOBT. The respondents who give iFOBT a higher rank (rank 1 is higher than rank 4) do not indicate more often that they would probably or definitely attend the screening.

The correlation between the impact on quality of life and intention to attend scales are low or medium and significant at 99% CI: ρ_s=0,240 for iFOBT; 0,327 for Colonoscopy, 0,351 for Sigmoidoscopy and 0,302 for Virtual Colonoscopy. This means there is a fair relation between the impact on quality of life and the intention to attend scores. The respondents who perceive a relative large drop in quality of life with a screening method do indicate more often that they would probably not or definitely not attend the screening with that screening method than respondents who perceive a relative small drop (or even increase) in quality of life.

The correlation between the impact on quality of life and direct ranking scales are ,except for iFOBT, low but significant at 99% CI: ρ_s=0,078 for iFOBT; -0,174 for Colonoscopy, -0,191

for Sigmoidoscopy and -0,201 for Virtual Colonoscopy. This means there is a weak relation between the impact on quality of life and the ranks. The respondents who perceive a relative large drop in quality of life give lower ranks (3 and 4) to that screening method than respondents who perceive a relative small drop (or even increase) in quality of life. This relation is not significant for iFOBT.

AHP

There seems to be a significant correlation between the AHP and intention to attend scores for Colonoscopy (ρ_s=0,180; p=0,020) and Virtual Colonoscopy (ρ_s=0,276; p=0,000), but not for iFOBT (ρ_s=0,029; p=0,713) and Sigmoidoscopy (ρ_s=0,113; p=0,145). So the AHP does not correlate well with the intention to attend scale. The respondents who give a screening method a relatively large AHP score do not indicate more often they would definitely or probably attend the screening with that method than respondents who give that screening method a relatively low AHP score.

This seems to be different for between AHP and direct ranking. All correlations are significant at 95% and all except the one for Sigmoidoscopy at 99% CI: ρ_s=-0,350 for iFOBT; -0,327 for Colonoscopy, -0,164 for Sigmoidoscopy and -0,415 for Virtual Colonoscopy. Hence we can say that AHP and the direct ranking scale correlate pretty well. The respondents who give a screening method a relatively large AHP score do not give a higher rank to that screening method than respondents who give that screening method a relatively low AHP score.

With both correlation measures (Pearson and Spearman) there seems to be no relation between the AHP scores and impact on quality of life except for the ones for Virtual Colonoscopy (r=0,258; p=0,01 & ρ_s=-0,342; p=0,00). The respondents who give a screening method a relatively large AHP score do not receive a relatively smaller drop (or even increase) in quality of life than respondents who give that screening method a relatively low AHP score.

3.8 CORRELATIONS BETWEEN DIFFERENCES

The correlations between differences are used to reduce the effect of noise from unknown variables. This is done for the AHP scale to see with witch scale it correlates best. This is also done to see which scale correlates best with the intention to attend scale. Table 11 shows this for the AHP scale and Table 12 shows this for the intention to attend scale. Note that the correlations with the direct ranking scale are negative due to it being a reversed scale. The last columns are the same, but are left for easier (horizontal) comparison.

Table 11: Correlation between differences: AHP with the other scales

	AHP and direct ranking		AHP and impact on quality of life		AHP and intention to attend	
Pairs of comparison	Spearman corr.	p	Spearman corr.	p	Spearman corr.	p
IFOBT-Colonoscopy	-0,391	0,000	0,240	0,002	0,194	0,012
IFOBT-Sigmoidoscopy	-0,240	0,002	0,239	0,002	0,171	0,028
IFOBT-Virtual Colonoscopy	-0,332	0,000	0,392	0,000	0,324	0,000
Colonoscopy-Sigmoidoscopy	-0,156	0,044	0,120	0,121	0,136	0,081
Colonoscopy-Virtual Colonoscopy	-0,369	0,000	0,272	0,000	0,348	0,000
Sigmoidoscopy-Virtual Colonoscopy	-0,331	0,000	0,218	0,005	0,392	0,000
Average	***-0,303***		***0,247***		***0,261***	

Table 12: Correlation between differences: intention to attend scale with the other scales

	Intention to attend and direct ranking		Intention to attend and impact on quality of life		Intention to attend and AHP	
Pairs of comparison	Spearman corr.	p	Spearman corr.	p	Spearman corr.	p
IFOBT-Colonoscopy	-0,462	0,000	0,385	0,000	0,194	0,012
IFOBT-Sigmoidoscopy	-0,439	0,000	0,408	0,000	0,171	0,028
IFOBT-Virtual Colonoscopy	-0,291	0,000	0,352	0,000	0,324	0,000
Colonoscopy-Sigmoidoscopy	-0,311	0,000	0,198	0,010	0,136	0,081
Colonoscopy-Virtual Colonoscopy	-0,395	0,000	0,298	0,000	0,348	0,000
Sigmoidoscopy-Virtual Colonoscopy	-0,441	0,000	0,418	0,000	0,392	0,000
Average	***-0,390***		***0,343***		***0,261***	

All correlations are significant with 95% CI and most with 99% CI, except the Colonoscopy-Sigmoidoscopy pair. The respondents who give a certain screening method a higher score than a certain other screening method with one scale do also indicate this with the other scales.

4. DISCUSSION

Ideally, all four measuring techniques would results in the same hierarchy of preferences. Yet, the results obtained with the AHP suggested a slightly different ranking of preferences for colorectal cancer screening than the other methods that were applied. As AHP is known to amplify small differences, like the often insignificant differences we found between iFOBT and Virtual Colonoscopy with the other scales, a sensitivity analysis was performed. This showed that AHP is very sensitive to the respondents' ability to judge clinical traits in a rational way. From the data, however, it seemed that the respondents were not able to judge clinical traits as sensitivity, specificity and safety (i.e. risks) in accordance with the risk information provided. One (partial) explanation for this could be that respondents think that 'Virtual' sounds more advanced and that they associate this with Virtual Colonoscopy to be better than regular colonoscopy, or even the other two methods. Noteworthy is also that the respondents indicate every criterion to be equally important. This is somewhat different from results found in previous studies [7, 8, 15, 16]. An explanation for this might be that some criteria in those studies overlapped or were interdependent.

Correlations between the four scales were analysed in two ways. First, it was analysed whether a certain screening method that gets a high score on one scale also gets a high score on the other scales. The second analysis considered the differences in scores between a pair of screening methods: if a certain screening method gets a higher score than a certain other screening method with one scale also gets a higher score with the other scales. The second method is less sensitive to noise from unknown variables; hence these correlations are stronger than the ones measured with the first method. Both correlation analyses indicate that when comparing the AHP scale with the other scales, AHP correlates best with the direct ranking scale. Yet, when comparing the intention to attend scale with the other scales, it correlates the worst with AHP. This could be explained by the period of time the scales and corresponding questions tend to be focussed on. The AHP method takes a long term view by including factors as sensitivity, specificity, frequency and risk. Direct ranking takes also a long term view by being general in what method you think is best. The intention to attend is more focussed on the short term since it asks for a direct action. Impact on quality of life also is more focussed on the short term, i.e. the actual screening event, since people tend to give quality of life changes in the near future a higher value than those in the late future [24].

Another reason for the lower correlations between AHP and the intention to attend scale could be the influence of unknown variables on intention to attend that are not included as criteria in the AHP analysis. This seems plausible when looking at behavioural theories like the Theory of Planned Behaviour from Ajzen [29]. For instance, this theory suggests that the attitude toward the behaviour, subjective norms and the perceived behavioural control influence the intention for a certain behaviour. Noteworthy is that the answers on the

intention to attend questions are most likely an overestimation of the actual attention to attend at a screening. This is due to the intention-behaviour gap [30, 31]. Also it is possible that respondents who are more interested in colorectal cancer screening are more likely to fill in the questionnaire and are also more likely to indicate they will attend the screening. All in all, the AHP model used in this study is not a good predictor of the intention to attend and therefore most likely also not a good predictor of the actual attendance. However, predicting the intention to attend (or the actual attendance) and eliciting preferences is not the same thing. Hence the AHP model should be adjusted for this by selecting different criteria. Factor analysis could be useful for this. Then AHP could perhaps be better used to predict the impact of offering different screening technologies on screening attendance.

LIMITS OF THIS STUDY

As every study, this study has some limitations that need further discussion in order to interpret the results correctly. First, it is possible that the web-based questionnaire resulted in some bias, since it is likely that younger people of our study population fill out the web-based questionnaire more often than the older ones because the younger ones are more experienced with computers. However, this turned not out to be a problem. Data on all 1494 respondents indicated that the incompletes and inconsistency are not age related. Nevertheless the data did unfold that inconsistency was related to gender, but the differences are small: 30% of the men were inconsistent versus 35% of the women. Data on all 1494 respondents also indicated that incomplete responses were related to education level, ranging from 58% for the lowest level to 31% for the highest level. Following this it is likely that the respondents found the questionnaire to be difficult, which resulted in a large number of incomplete responses. In addition, people did probably not only found the questionnaire difficult because of the AHP method, but also because colorectal cancer screening is a weighty subject. This matches the comments at the end of the questionnaire. Although the low response rates influence the generalizability of this study, it is not very likely that this has affected the findings regarding people's preferences. When analysing whether the results on the measurement scales would have been different when the respondents that were inconsistent on the AHP questions are included, revealed that these results are not substantially different from the original scores. Generally including these respondents also lead to less differentiation between the screening methods. This indicates that the answers are more random and that they were excluded justly.

For future research it is thus important to make the AHP questionnaire as easy to understand as possible. This means restricting the number of criteria and alternatives to make the questionnaire shorter and clearer. A maximum of five criteria and five alternatives seems to be on the high side. When using a fully adjustable questionnaire program or website, it could be beneficial if the questionnaire is interactive. For example, when the respondent finished one group of questions the inconsistency could be measured directly,

which could then be used to offer feedback if needed. This feedback could be a more detailed description about answering the questions or just a request to take another look at the previous answers.

Finally, colorectal cancer screening is used to be repeated after a couple of years and people get an experience with it, which can be either good, bad or neutral. This could influence people's decision for attending another screening when they are older. In this study these people were excluded from the analysis and therefore the analysis is probably likely to be only valid for the first screening.

5. CONCLUSION

The Analytic Hierarchy Process can be used in an online questionnaire to measure patient preferences for colorectal cancer but it seems only partially valid, depending on which criteria are used in the AHP model. That is, it appears not valid for measuring clinical traits like sensitivity, specificity and safety or risks. Such trade-offs should therefore be left, for example, for experts to judge or to smaller groups of respondents who are getting guidance with answering the AHP questions and who can discuss their opinions. When making some corrections for this, all results points to the conclusion that iFOBT and Virtual Colonoscopy are both equally preferred by Dutch men and women aged 55-75 years.

The correlations analysis further show us that when comparing the intention to attend scale with the other scales, it correlates the worst with AHP. Therefore it is questionable if AHP is the best way to predict impact of offering different screening technologies on screening attendance. However, predicting the intention to attend (or the actual attendance) and eliciting preferences is not the same thing. Hence the AHP model should be adjusted for this by selecting different criteria. When this is done, AHP has potential to be a good predictor for the intention to attend or the actual attendance.

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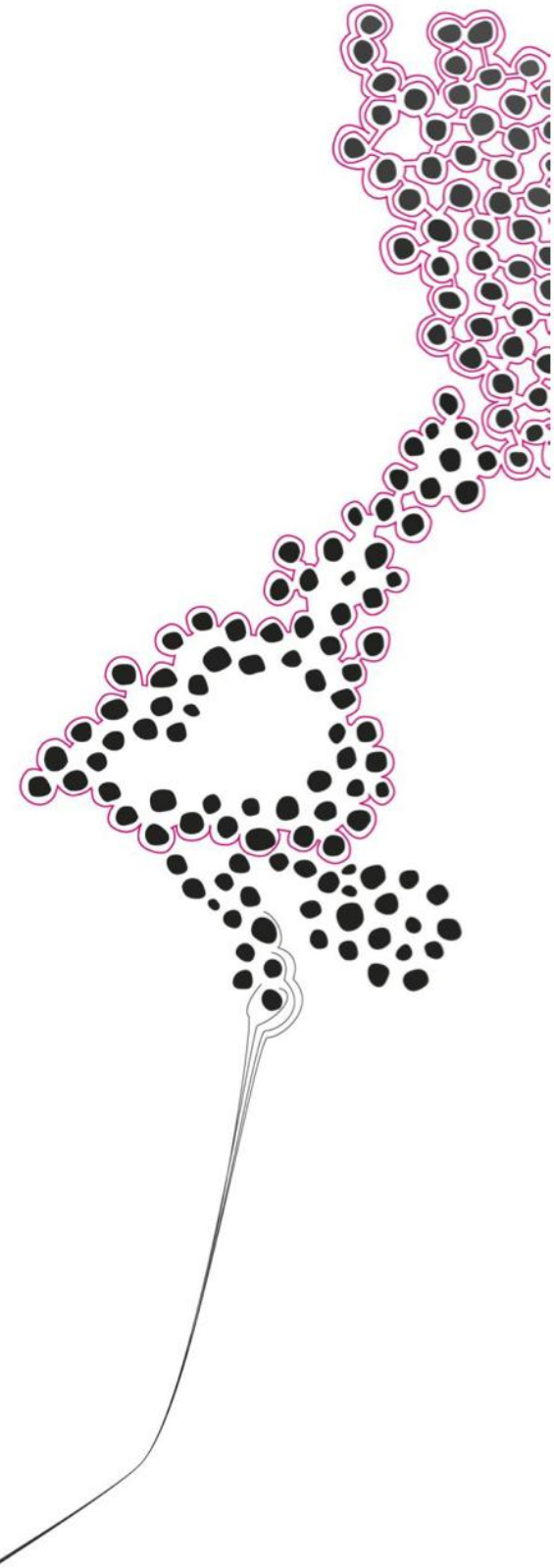


Appendix

Validating the
ANALYTIC HIERARCHY PROCESS
for eliciting colorectal cancer screening preferences
IN AN ONLINE QUESTIONNAIRE

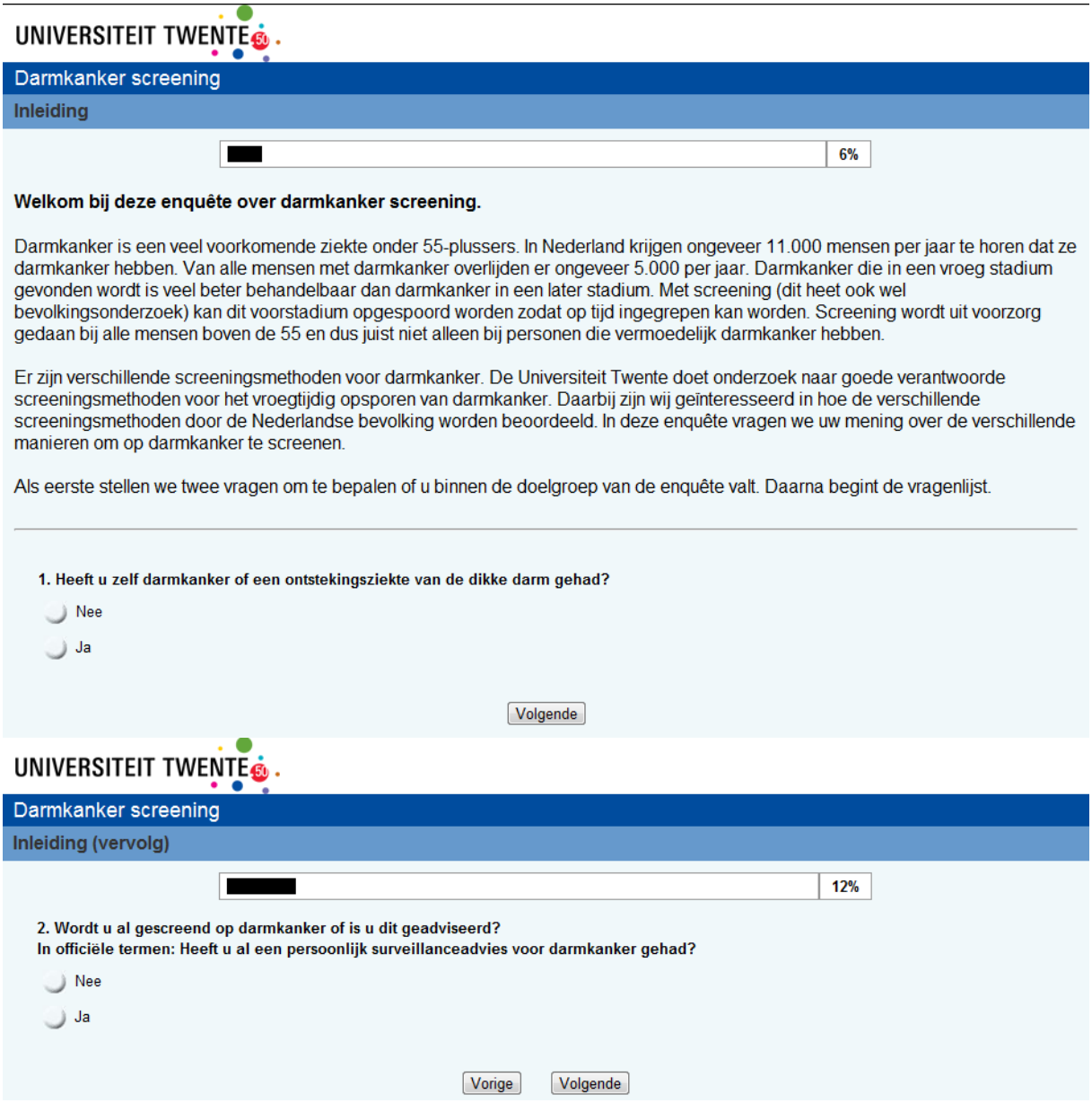
Nick G.K. Mulder

MASTER THESIS
Health Sciences

FACULTY MANAGEMENT AND GOVERNANCE
Health Technology and Services Research

UNIVERSITY OF TWENTE.

APPENDIX 1: THE QUESTIONNAIRE



UNIVERSITEIT TWENTE.

Darmkanker screening

Inleiding

6%

Welkom bij deze enquête over darmkanker screening.

Darmkanker is een veel voorkomende ziekte onder 55-plussers. In Nederland krijgen ongeveer 11.000 mensen per jaar te horen dat ze darmkanker hebben. Van alle mensen met darmkanker overlijden er ongeveer 5.000 per jaar. Darmkanker die in een vroeg stadium gevonden wordt is veel beter behandelbaar dan darmkanker in een later stadium. Met screening (dit heet ook wel bevolkingsonderzoek) kan dit voorstadium opgespoord worden zodat op tijd ingegrepen kan worden. Screening wordt uit voorzorg gedaan bij alle mensen boven de 55 en dus juist niet alleen bij personen die vermoedelijk darmkanker hebben.

Er zijn verschillende screeningsmethoden voor darmkanker. De Universiteit Twente doet onderzoek naar goede verantwoorde screeningsmethoden voor het vroegtijdig opsporen van darmkanker. Daarbij zijn wij geïnteresseerd in hoe de verschillende screeningsmethoden door de Nederlandse bevolking worden beoordeeld. In deze enquête vragen we uw mening over de verschillende manieren om op darmkanker te screenen.

Als eerste stellen we twee vragen om te bepalen of u binnen de doelgroep van de enquête valt. Daarna begint de vragenlijst.

1. Heeft u zelf darmkanker of een ontstekingsziekte van de dikke darm gehad?

- Nee
- Ja

Volgende

UNIVERSITEIT TWENTE.

Darmkanker screening

Inleiding (vervolg)

12%

2. Wordt u al gescreend op darmkanker of is u dit geadviseerd?
In officiële termen: Heeft u al een persoonlijk surveillanceadvies voor darmkanker gehad?

- Nee
- Ja

Vorige Volgende

UNIVERSITEIT TWENTE.

Darmkanker screening

Voorbeeld

19%

Om u op weg te helpen volgt nu een uitleg over de manier waarop de vragen beantwoord moeten worden. Daaronder staat nog een voorbeeldvraag ter verduidelijking.

Bij de keuze voor een screeningsmethode voor darmkanker spelen verschillende kenmerken van de testen een rol. U kunt bijvoorbeeld een voorkeur hebben voor een test waarvan u weinig ongemak ondervindt, of een test die de meest betrouwbare uitslag geeft. In deze enquête wordt u steeds gevraagd om een methode aan de linkerkant te vergelijken met een methode aan de rechterkant.

Als u een voorkeur heeft voor de screeningsmethode aan de *linkerkant*, dan klikt u aan de *linkerkant* van het midden (1) op een bolletje.

Als u een voorkeur heeft voor de screeningsmethode aan de *rechterkant*, dan klikt u aan de *rechterkant* van het midden (1) op een bolletje.

Als u geen voorkeur heeft, dan klikt u in het midden op het bolletje onder de 1.

Met het cijfer dat u aanklikt, geeft u aan hoe groot uw voorkeur is voor de test. De cijfers hebben de volgende betekenis:
1 = Geen voorkeur
3 = Kleine voorkeur
5 = Grote voorkeur
7 = Erg grote voorkeur
9 = Extreem grote voorkeur
2,4,6 en 8 = Tussenliggende waarden voor als u twijfelt tussen twee van de bovenstaande getallen.

Deze betekenissen kunt u ook op de volgende pagina's onderaan terugvinden.

Hieronder volgt het voorbeeld. Hierin gaat op de eerste regel een grote voorkeur uit naar Methode 1 ten opzichte van Methode 2. Op de tweede regel gaat een erg grote voorkeur uit naar Methode 3 ten opzichte van Methode 2.

VOORBEELDVRAAG: Naar welke screeningsmethode gaat uw voorkeur uit met betrekking tot het criterium 'ongemak' en in welke mate?

	-9	-8	-7	-6	-5	-4	-3	-2	1	2	3	4	5	6	7	8	9	
Methode 1	○	○	○	○	✓	○	○	○	○	○	○	○	○	○	○	○	○	Methode 2
Methode 2	○	○	○	○	○	○	○	○	○	○	○	○	○	○	✓	○	○	Methode 3

Opmerking: zoals u bij de voorbeeldvraag ziet, staan de twee methoden en de rij met bolletjes op dezelfde hoogte. Op sommige computers kunnen de rijen misschien een beetje verspringen. Met behulp van het kleurverschil tussen de rijen kunt u dan toch zien welke methode bij welke rij bolletjes hoort.

Vorige Volgende

UNIVERSITEIT TWENTE.

Darmkanker screening

Doorgaan

[redacted] 25%

3. Heeft u de uitleg begrepen en wilt u doorgaan met de enquête?

- Ja, ik heb de uitleg begrepen en wil doorgaan met de enquête.
- Nee, ik heb de uitleg niet begrepen en wil deze graag nog een keer zien.
- Nee, ik heb de uitleg niet begrepen en wil stoppen met het invullen van deze enquête.

Vorige Volgende

UNIVERSITEIT TWENTE.

Darmkanker screening

Screeningsmethoden en kenmerken

[redacted] 50%

We willen graag van u weten wat uw beoordeling is van de verschillende screeningsmethoden op vier kenmerken. Er zijn geen goede of foute antwoorden, het gaat om uw mening. We vergelijken vier screeningsmethoden:

- Met de ontlastingstest kunnen (onzichtbare) sporen bloed in de ontlasting aangetoond worden. Bloed in de ontlasting is een aanwijzing voor de aanwezigheid van een darmtumor en op deze manier kan de hele dikke darm onderzocht worden.
- Bij een coloscopie wordt met een flexibele buis (video-endoscoop) via de anus in het lichaam gekeken. Op deze manier kan de gehele dikke darm worden onderzocht.
- Bij een sigmoïdoscopie wordt ook een flexibele buis gebruikt om via de anus in de dikke darm te kijken. Met deze techniek is het echter alleen mogelijk om het laatste deel van de dikke darm te onderzoeken.
- Virtuele coloscopie is een beeldvormende techniek waarmee met een CT-scanner röntgenfoto's van de dikke darm gemaakt kunnen worden. Op deze manier kan de hele (binnenkant van de) dikke darm van buitenaf onderzocht worden.

Deze omschrijving kunt u ook op de volgende pagina's onderaan terugvinden.

De kenmerken waarop we de screeningsmethoden vergelijken zijn:

1. Juiste uitslag als u WEL darmkanker heeft
2. Juist uitslag als u GEEN darmkanker heeft
3. Veiligheid
4. Belasting

Op elke pagina worden alle testen vergeleken op een van de bovenstaande kenmerken. Eerst wordt steeds het kenmerk uitgelegd en daarna krijgt u een specifieke beschrijving over de screeningsmethoden met betrekking tot dit kenmerk. Aan de hand hiervan kunt u de afweging maken naar welke methode uw voorkeur uitgaat. Dit kan soms lastig zijn om exact aan te geven omdat er op de schaal van -9 tot 9 veel keuzemogelijkheden zijn. U kunt in die gevallen de keuze gerust op gevoel maken.

Vorige Volgende

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Darmkanker screening

Beoordelen van alternatieven (1. Juiste uitslag als u WEL darmkanker heeft)

Juiste uitslag als iemand WEL darmkanker heeft

Geen enkele test is perfect. Wanneer iemand een afwijking heeft die duidt op darmkanker dan moet dit ook zo vaak mogelijk door de test worden bevestigd. Alleen bij een positieve uitslag zal er namelijk vervolgonderzoek plaatsvinden. Als de test aangeeft dat iemand geen darmkanker heeft terwijl dit wel zo is, dan wordt er geen vervolgonderzoek uitgevoerd. Dit kan negatieve gevolgen hebben voor die persoon.

Beschrijving met betrekking tot 'juiste uitslag als iemand WEL darmkanker heeft':

Ontlastingstest

- Als iemand WEL darmkanker heeft dan geeft de test dit in 14 van de 20 gevallen aan.
- In 6 van de 20 gevallen wordt de darmkanker niet opgemerkt.
- Als er wel darmkanker wordt aangegeven dan zal het vervolgonderzoek plaatsvinden door middel van een coloscopie om deze afwijkingen te onderzoeken en te verwijderen.

Coloscopie

- Als iemand WEL darmkanker heeft dan geeft de test dit in 19 van de 20 gevallen aan.
- In 1 van de 20 gevallen wordt de darmkanker niet opgemerkt.
- Als er wel darmkanker wordt aangegeven dan kunnen deze afwijkingen direct onderzocht en verwijderd worden.

Sigmoïdoscopie

- Als iemand WEL darmkanker heeft dan geeft de test dit in 13 van de 20 gevallen aan.
- In 7 van de 20 gevallen wordt de darmkanker niet opgemerkt.
- Als er wel darmkanker wordt aangegeven dan zal het vervolgonderzoek plaatsvinden door middel van een coloscopie om de gehele darm te onderzoeken en de afwijkingen te verwijderen.

Virtuele coloscopie

- Als iemand WEL darmkanker heeft dan geeft de test dit in 19 van de 20 gevallen aan.
- In 1 van de 20 gevallen wordt de darmkanker niet opgemerkt.
- Als er wel darmkanker wordt aangegeven dan zal het vervolgonderzoek plaatsvinden door middel van een coloscopie om deze afwijkingen te onderzoeken en te verwijderen.

4. Naar welke screeningsmethode gaat uw voorkeur uit met betrekking tot het kenmerk 'juiste uitslag als iemand WEL darmkanker heeft' en in welke mate?

	-9	-8	-7	-6	-5	-4	-3	-2	1	2	3	4	5	6	7	8	9	
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Coloscopie
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Sigmoïdoscopie
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie
Coloscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Sigmoïdoscopie
Coloscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie
Sigmoïdoscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie

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1 = Geen voorkeur
3 = Kleine voorkeur
5 = Grote voorkeur
7 = Erg grote voorkeur
9 = Extreem grote voorkeur
2,4,6 en 8 = Tussenliggende waarden

Korte samenvatting van de screeningsmethoden:

Met de ontlastingstest kunnen (onzichtbare) sporen bloed in de ontlasting aangetoond worden. Bloed in de ontlasting is een aanwijzing voor de aanwezigheid van een darmtumor en op deze manier kan de hele dikke darm onderzocht worden.

Bij een coloscopie wordt met een flexibele buis (video-endoscoop) via de anus in het lichaam gekeken. Op deze manier kan de gehele dikke darm worden onderzocht.

Bij een sigmoïdoscopie wordt ook een flexibele buis gebruikt om via de anus in de dikke darm te kijken. Met deze techniek is het echter alleen mogelijk om het laatste deel van de dikke darm te onderzoeken.

Virtuele coloscopie is een beeldvormende techniek waarmee met een CT-scanner röntgenfoto's van de dikke darm gemaakt kunnen worden. Op deze manier kan de hele (binnenkant van de) dikke darm van buitenaf onderzocht worden.

Vorige Volgende

UNIVERSITEIT TWENTE.

Darmkanker screening

Beoordelen van alternatieven (2. Juiste uitslag als u GEEN darmkanker heeft)

Juiste uitslag als iemand GEEN darmkanker heeft
Wanneer iemand GEEN darmkanker heeft dan moet dit ook zo vaak mogelijk uit de test komen. Het is niet de bedoeling dat iemand die gezond is toch te horen krijgt dat hij/zij mogelijke darmkanker heeft. Dit zorgt voor angst en er wordt dan vervolgonderzoek uitgevoerd, terwijl deze later onnodig blijken te zijn.

Beschrijving met betrekking tot 'juiste uitslag als iemand GEEN darmkanker heeft':

Ontlastingstest

- Als iemand GEEN darmkanker heeft dan geeft de test dit in 19 van de 20 gevallen aan.
- In 1 van de 20 gevallen wordt er onterecht darmkanker opgemerkt.
- Het onnodige vervolgonderzoek zal door middel van een coloscopie plaatsvinden.

Coloscopie

- Als iemand GEEN darmkanker heeft dan geeft de test dit in 20 van de 20 gevallen aan.
- In 0 van de 20 gevallen wordt er onterecht darmkanker opgemerkt.
- Er zal dus ook geen onnodig vervolgonderzoek plaatsvinden.

Sigmoïdoscopie

- Als iemand GEEN darmkanker heeft dan geeft de test dit in 20 van de 20 gevallen aan.
- In 0 van de 20 gevallen wordt er onterecht darmkanker opgemerkt.
- Er zal dus ook geen onnodig vervolgonderzoek plaatsvinden.

Virtuele coloscopie

- Als iemand GEEN darmkanker heeft dan geeft de test dit in 19 van de 20 gevallen aan.
- In 1 van de 20 gevallen wordt er onterecht darmkanker opgemerkt.
- Het onnodige vervolgonderzoek zal door middel van een coloscopie plaatsvinden.

5. Naar welke screeningsmethode gaat uw voorkeur uit met betrekking tot het kenmerk 'juiste uitslag als u GEEN darmkanker heeft' en in welke mate?

	-9	-8	-7	-6	-5	-4	-3	-2	1	2	3	4	5	6	7	8	9	
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Coloscopie
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Sigmoïdoscopie
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie
Coloscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Sigmoïdoscopie
Coloscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie
Sigmoïdoscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie

1 = Geen voorkeur
3 = Kleine voorkeur
5 = Grote voorkeur
7 = Erg grote voorkeur
9 = Extreem grote voorkeur
2,4,6 en 8 = Tussenliggende waarden

Korte samenvatting van de screeningsmethoden:

Met de ontlastingstest kunnen (onzichtbare) sporen bloed in de ontlasting aangetoond worden. Bloed in de ontlasting is een aanwijzing voor de aanwezigheid van een darmtumor en op deze manier kan de hele dikke darm onderzocht worden.

Bij een coloscopie wordt met een flexibele buis (video-endoscoop) via de anus in het lichaam gekeken. Op deze manier kan de gehele dikke darm worden onderzocht.

Bij een sigmoïdoscopie wordt ook een flexibele buis gebruikt om via de anus in de dikke darm te kijken. Met deze techniek is het echter alleen mogelijk om het laatste deel van de dikke darm te onderzoeken.

Virtuele coloscopie is een beeldvormende techniek waarmee met een CT-scanner röntgenfoto's van de dikke darm gemaakt kunnen worden. Op deze manier kan de hele (binnenkant van de) dikke darm van buitenaf onderzocht worden.

Vorige Volgende

UNIVERSITEIT TWENTE.

Darmkanker screening

Beoordelen van alternatieven (3. Veiligheid)

69%

Veiligheid

Wat is de kans op complicaties tijdens en/of na het uitvoeren van de test en hoe ernstig zijn de complicaties?

Beschrijving met betrekking tot 'veiligheid':

Ontlastingstest

- Geen kans op complicaties.

Coloscopie

- Kleine kans op ernstige complicaties. Per 100.000 mensen die een coloscopie ondergaan, zijn er ongeveer 35 mensen die te maken krijgen met een inwendige bloeding of darmperforatie. In dit geval moet er direct geopereerd worden om een buikvliesontsteking te voorkomen.

Sigmoïdoscopie

- Kleine kans op ernstige complicaties. Per 100.000 mensen die de sigmoïdoscopie ondergaan, zijn er 2 tot 3 mensen die te maken krijgen met een inwendige bloeding of darmperforatie. In dit geval moet er direct geopereerd worden om een buikvliesontsteking te voorkomen.

Virtuele coloscopie

- Erg kleine kans op een milde complicatie. Bij het gebruik van een jodiumhoudend contrastmiddel kan een allergische reactie optreden. Als bekend is dat u een jodiumallergie heeft, kan er een ander contrastmiddel worden gebruikt.

- Kleine kans op een ernstige complicatie. Bij de CT-scan wordt u blootgesteld aan (ioniserende / radioactieve) straling. De kans is klein dat dit gevolgen heeft: de schatting is dat bij 8 op de 100.000 mensen hierdoor kanker zal ontstaan.

6. Naar welke screeningsmethode gaat uw voorkeur uit met betrekking tot het kenmerk 'veiligheid' en in welke mate?

	-9	-8	-7	-6	-5	-4	-3	-2	1	2	3	4	5	6	7	8	9	
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Coloscopie
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Sigmoïdoscopie
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie
Coloscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Sigmoïdoscopie
Coloscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie
Sigmoïdoscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie

1 = Geen voorkeur
3 = Kleine voorkeur
5 = Grote voorkeur
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Korte samenvatting van de screeningsmethoden:

Met de ontlastingstest kunnen (onzichtbare) sporen bloed in de ontlasting aangetoond worden. Bloed in de ontlasting is een aanwijzing voor de aanwezigheid van een darmtumor en op deze manier kan de hele dikke darm onderzocht worden.

Bij een coloscopie wordt met een flexibele buis (video-endoscoop) via de anus in het lichaam gekeken. Op deze manier kan de gehele dikke darm worden onderzocht.

Bij een sigmoïdoscopie wordt ook een flexibele buis gebruikt om via de anus in de dikke darm te kijken. Met deze techniek is het echter alleen mogelijk om het laatste deel van de dikke darm te onderzoeken.

Virtuele coloscopie is een beeldvormende techniek waarmee met een CT-scanner röntgenfoto's van de dikke darm gemaakt kunnen worden. Op deze manier kan de hele (binnenkant van de) dikke darm van buitenaf onderzocht worden.

Vorige Volgende

UNIVERSITEIT TWENTE.

Darmkanker screening

Beoordelen van alternatieven (4. Belasting)

75%

Belasting

Het kenmerk 'belasting' is een combinatie van hoe ongemakkelijk de screening is en hoe vaak deze uitgevoerd moet worden. Dit kenmerk is daarom onderverdeeld in twee aspecten: 'ongemak' en 'frequentie'.

Ongemak

Hoe ongemakkelijk is de procedure voor u? Hierbij kunt u denken aan of u zelf iets moet voorbereiden, hoe lang de procedure duurt en of de procedure vervelend is of zelfs pijn doet.

Frequentie

Hoe vaak zou de screening uitgevoerd moeten worden? Met andere woorden: om de hoeveel jaar zou u de screeningstest eigenlijk moeten ondergaan als deze in Nederland werd ingevoerd?

Beschrijving van de screeningsmethoden met betrekking tot 'ongemak':

Ontlastingstest

Met de ontlastingstest kunnen (onzichtbare) sporen bloed in de ontlasting aangetoond worden. Bloed in de ontlasting is een aanwijzing voor de aanwezigheid van een darmtumor en op deze manier kan de hele dikke darm onderzocht worden.

- Het is niet nodig om voorafgaand aan de test een speciaal dieet te nemen of rekening te houden met medicijnen.
- Voor deze test wordt er een testbuisje naar u opgestuurd. In de dop van het testbuisje zit een borsteltje verwerkt waarmee u snel en hygiënisch een klein beetje ontlasting kunt verzamelen. Dit testbuisje kunt u per post terugsturen.

Coloscopie
Bij een coloscopie wordt met een flexibele buis (video-endoscoop) via de anus in het lichaam gekeken. Op deze manier kan de *gehele dikke darm* worden onderzocht.

- Om de darm leeg te maken moet u gedurende één dag voor het onderzoek u enkele liters van een sterk laxerend middel drinken dat diarree veroorzaakt. Het is dan ook de bedoeling dat u op de dag van het onderzoek niet meer eet.
- Vlak voor het onderzoek krijgt u pijn- en slaapmiddel toegediend om het onderzoek meer comfortabel te maken. Het onderzoek zal daardoor alleen vervelend aanvoelen en over het algemeen geen pijn doen. Na afloop van het onderzoek bent u nog een tijd suf van deze medicatie.
- Het onderzoek zelf duurt ongeveer 20 tot 30 minuten. Daarna moet u nog wel enkele uren rust houden in verband met de medicijnen.

Sigmoïdoscopie
Bij een sigmoïdoscopie wordt ook een flexibele buis gebruikt om via de anus in de dikke darm te kijken. Met deze techniek is het echter alleen mogelijk om het *laatste deel van de dikke darm* te onderzoeken.

- De voorbereiding bij deze methode bestaat uit een klysma. Dit wordt ook wel een darmspoeling genoemd en houdt in dat de darmen via een slangetje in de anus gespoeld worden met een vloeistof. Dit kunt u zelf 1 tot 2 uren van te voren thuis doen, maar het kan ook vlak voor het onderzoek in de onderzoekskamer bij u gedaan worden.
- Voor het onderzoek wordt doorgaans geen pijn- en slaapmedicatie toegediend omdat een sigmoïdoscopie amper pijn doet. Wel kan het af en toe gevoelig zijn.
- Het onderzoek zelf duurt minder dan 10 minuten.

Virtuele Coloscopie
Virtuele coloscopie is een beeldvormende techniek waarmee met een CT-scanner röntgenfoto's van de dikke darm gemaakt kunnen worden. Op deze manier kan de hele (binnenkant van de) dikke darm van buitenaf onderzocht worden. U komt dan in een apparaat te liggen dat door uw huid heen de foto's maakt.

- Ter voorbereiding moet u een vezelarm dieet volgen(geen vezelrijke groenten of fruit) en moet u contrastmiddel drinken.
- Vlak voor het maken van de foto's wordt via de anus lucht in de darm gebracht met een dunne flexibele buis en wordt via een ader een spierverslapper toegediend.
- Een slaapmiddel of verdoving is niet nodig omdat het onderzoek zelf niet vervelend voelt en geen pijn doet. Het via de anus inbrengen van lucht in de darm voorafgaand aan het onderzoek is vaak wel een raar gevoel.
- Het totale onderzoek duurt ongeveer een kwartier waarvan minder dan een halve minuut nodig is voor het daadwerkelijk maken van de foto's.

7. Naar welke screeningsmethode gaat uw voorkeur uit met betrekking tot het kenmerk 'ongemak' en in welke mate?

	-9	-8	-7	-6	-5	-4	-3	-2	1	2	3	4	5	6	7	8	9	
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Coloscopie
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Sigmoïdoscopie
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie
Coloscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Sigmoïdoscopie
Coloscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie
Sigmoïdoscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie

---

Beschrijving met betrekking tot 'frequentie':

Ontlastingstest

- Een screening om de 2 jaar.

Coloscopie

- Een screening om de 10 jaar.

Sigmoïdoscopie

- Een screening om de 5 jaar.

Virtuele coloscopie

- Een screening om de 5 jaar.

8. Naar welke screeningsmethode gaat uw voorkeur uit met betrekking tot het kenmerk 'frequentie' en in welke mate?

	-9	-8	-7	-6	-5	-4	-3	-2	1	2	3	4	5	6	7	8	9	
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Coloscopie
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Sigmoïdoscopie
Ontlastingstest	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie
Coloscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Sigmoïdoscopie
Coloscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie
Sigmoïdoscopie	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Virtuele coloscopie

1 = Geen voorkeur
3 = Kleine voorkeur
5 = Grote voorkeur
7 = Erg grote voorkeur
9 = Extreem grote voorkeur
2,4,6 en 8 = Tussenliggende waarden

Korte samenvatting van de screeningsmethoden:

Met de ontlastingstest kunnen (onzichtbare) sporen bloed in de ontlasting aangetoond worden. Bloed in de ontlasting is een aanwijzing voor de aanwezigheid van een darmtumor en op deze manier kan de hele dikke darm onderzocht worden.

Bij een coloscopie wordt met een flexibele buis (video-endoscoop) via de anus in het lichaam gekeken. Op deze manier kan de gehele dikke darm worden onderzocht.

Bij een sigmoïdoscopie wordt ook een flexibele buis gebruikt om via de anus in de dikke darm te kijken. Met deze techniek is het echter alleen mogelijk om het laatste deel van de dikke darm te onderzoeken.

Virtuele coloscopie is een beeldvormende techniek waarmee met een CT-scanner röntgenfoto's van de dikke darm gemaakt kunnen worden. Op deze manier kan de hele (binnenkant van de) dikke darm van buitenaf onderzocht worden.

Vorige Volgende

UNIVERSITEIT TWENTE.

Darmkanker screening

Kenmerken

81%

Nu willen we graag van u weten hoe belangrijk u de kenmerken vindt bij het kiezen van een screeningsmethode. Eerst volgt nogmaals de omschrijving van de kenmerken.

Beschrijving van de kenmerk:

1. Juiste uitslag als iemand WEL darmkanker heeft
Wanneer iemand WEL een afwijking heeft die duidt op darmkanker dan moet dit ook zo vaak mogelijk uit de test komen. Hierdoor kan het juiste vervolgonderzoek plaatsvinden. Het is niet de bedoeling dat iemand gezond wordt verklaard terwijl dit niet zo is. Er wordt dan geen vervolgonderzoek uitgevoerd.

2. Juiste uitslag als iemand GEEN darmkanker heeft
Wanneer iemand GEEN afwijking heeft die duidt op darmkanker dan moet dit ook zo vaak mogelijk uit de test komen. Het is niet de bedoeling dat iemand die gezond is toch te horen krijgt dat hij/zij waarschijnlijk darmkanker heeft. Dit zorgt onterecht voor angst en er wordt dan onnodig vervolgonderzoek uitgevoerd.

3. Veiligheid
Wat is de kans op complicaties en hoe ernstig zijn deze?

4. Belasting
Een combinatie van hoe ongemakkelijk de screening is en hoe vaak deze uitgevoerd moet worden:

Ongemak
Hoe ongemakkelijk is de procedure voor u? Hierbij kunt u denken aan of u zelf iets moet voorbereiden, hoe lang de procedure duurt en of de procedure vervelend is of zelfs pijn doet.

Frequentie
Hoe vaak zou de test uitgevoerd moeten worden? Met andere woorden: om de hoeveel jaar moet de test uitgevoerd worden?

U kunt de vraag op dezelfde manier beantwoorden als de vorige vragen. Er wordt nu alleen niet om uw voorkeur gevraagd maar welk kenmerk u belangrijker vindt. De bijbehorende uitleg van de scores staat hieronder.
1 = Even belangrijk
3 = Iets belangrijker
5 = Veel belangrijker
7 = Erg veel belangrijker
9 = Extreem belangrijker
2, 4, 6 en 8 = Tussenliggende waarden

---

9. Welk kenmerk is voor u belangrijker bij het kiezen van een screeningsmethode en in welke mate?

	-9	-8	-7	-6	-5	-4	-3	-2	1	2	3	4	5	6	7	8	9	
Juiste uitslag WEL darmkanker	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Juiste uitslag GEEN da
Juiste uitslag WEL darmkanker	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Veiligheid
Juiste uitslag WEL darmkanker	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Belasting
Juiste uitslag GEEN darmkanker	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Veiligheid
Juiste uitslag GEEN darmkanker	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Belasting
Veiligheid	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Belasting

10. Met betrekking tot het kenmerk 'belasting', welk aspect vindt u belangrijker en in welke mate?

	-9	-8	-7	-6	-5	-4	-3	-2	1	2	3	4	5	6	7	8	9	
Ongemak	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	Frequentie

Vorige Volgende

UNIVERSITEIT TWENTE.

Darmkanker screening

Bereidheid tot screening

88%

Op deze pagina willen we graag van u weten of u mee zou doen aan een screeningsprogramma.

---

11. Stel u wordt door de overheid uitgenodigd voor een gratis screening op darmkanker met een ontlastingstest. Bent u van plan dan mee te doen?

- Beslist niet
- Waarschijnlijk niet
- Misschien wel / misschien niet
- Waarschijnlijk wel
- Beslist wel

12. Stel u wordt door de overheid uitgenodigd voor een gratis screening op darmkanker met een coloscopie. Bent u van plan dan mee te doen?

- Beslist niet
- Waarschijnlijk niet
- Misschien wel / misschien niet
- Waarschijnlijk wel
- Beslist wel

13. Stel u wordt door de overheid uitgenodigd voor een gratis screening op darmkanker met een sigmoïdoscopie. Bent u van plan dan mee te doen?

- Beslist niet
- Waarschijnlijk niet
- Misschien wel / misschien niet
- Waarschijnlijk wel
- Beslist wel

14. Stel u wordt door de overheid uitgenodigd voor een gratis screening op darmkanker met een virtuele coloscopie. Bent u van plan dan mee te doen?

- Beslist niet
- Waarschijnlijk niet
- Misschien wel / misschien niet
- Waarschijnlijk wel
- Beslist wel

Korte samenvatting van de screeningsmethoden:

Met de ontlastingstest kunnen (onzichtbare) sporen bloed in de ontlasting aangetoond worden. Bloed in de ontlasting is een aanwijzing voor de aanwezigheid van een darmtumor en op deze manier kan de hele dikke darm onderzocht worden.

Bij een coloscopie wordt met een flexibele buis (video-endoscoop) via de anus in het lichaam gekeken. Op deze manier kan de gehele dikke darm worden onderzocht.

Bij een sigmoïdoscopie wordt ook een flexibele buis gebruikt om via de anus in de dikke darm te kijken. Met deze techniek is het echter alleen mogelijk om het laatste deel van de dikke darm te onderzoeken.

Virtuele coloscopie is een beeldvormende techniek waarmee met een CT-scanner röntgenfoto's van de dikke darm gemaakt kunnen worden. Op deze manier kan de hele (binnenkant van de) dikke darm van buitenaf onderzocht worden.

Vorige Volgende

UNIVERSITEIT TWENTE.

Darmkanker screening

Kwaliteit van leven

94%

U heeft aangegeven hoe de verschillende screeningsmethoden scoren op vier kenmerken en welke kenmerken u het belangrijkste vindt. Ook heeft u uw bereidheid tot screening aangegeven. Ten slotte willen we graag weten welke screeningsmethode u het beste vindt en hoe u denkt dat de screeningsmethoden uw kwaliteit van leven zouden beïnvloeden.

---

15. Welke test vindt u het beste? Selecteer achter elke test of deze voor u op nummer 1, 2, 3 of 4 staat. Hierbij is 1 het beste, en 4 het slechtste.

	Ontlastingstest	Coloscopie	Sigmoïdoscopie	Virtuele coloscopie
Mijn nummer 1	○	○	○	○
Mijn nummer 2	○	○	○	○
Mijn nummer 3	○	○	○	○
Mijn nummer 4	○	○	○	○

16. Graag willen wij u verzoeken om op een schaal van 0 tot 100 aan te geven hoe u *op dit moment* uw kwaliteit van leven waardeert. De afbeelding hiernaast is toegevoegd ter verduidelijking. Het antwoord kunt u hieronder in de witte vakjes intypen.

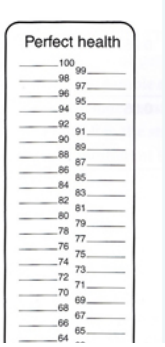
Hieronder kun u aangeven hoe u verwacht dat uw kwaliteit van leven wordt beïnvloed door het meedoen aan de test.

Als deze niet beïnvloed wordt door het meedoen aan de test vult u hetzelfde cijfer in als u hierboven hebt ingevuld.

Als uw kwaliteit van leven er beter van wordt, vult u een hoger getal in, en als uw kwaliteit van leven er slechter van wordt, vult u een lager getal in.

Door het geven van een cijfer van 0 geeft u aan dat u uw kwaliteit van leven beoordeeld als de voor u slechts denkbare gezondheidstoestand. U voelt zich bijvoorbeeld tijden het doen van de test even slecht als op het moment dat u terminale kanker heeft.

Afbeelding ter verduidelijking
100 staat voor perfecte kwaliteit van leven
0 staat voor dood of slechtst denkbare kwaliteit van leven

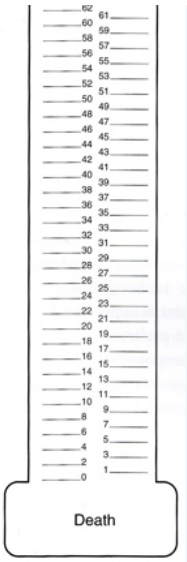


17. Hoe hoog verwacht u dat uw kwaliteit van leven is door het meedoen aan de screening met de ontlastingstest?

18. Hoe hoog verwacht u dat uw kwaliteit van leven is door het meedoen aan de screening met de coloscopie?

19. Hoe hoog verwacht u dat uw kwaliteit van leven is door het meedoen aan de screening met de sigmoïdoscopie?

20. Hoe hoog verwacht u dat uw kwaliteit van leven is door het meedoen aan de screening met de virtuele coloscopie?



Korte samenvatting van de screeningsmethoden:

Met de ontlastingstest kunnen (onzichtbare) sporen bloed in de ontlasting aangetoond worden. Bloed in de ontlasting is een aanwijzing voor de aanwezigheid van een darmtumor en op deze manier kan de hele dikke darm onderzocht worden.

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Bij een sigmoïdoscopie wordt ook een flexibele buis gebruikt om via de anus in de dikke darm te kijken. Met deze techniek is het echter alleen mogelijk om het laatste deel van de dikke darm te onderzoeken.

Virtuele coloscopie is een beeldvormende techniek waarmee met een CT-scanner röntgenfoto's van de dikke darm gemaakt kunnen worden. Op deze manier kan de hele (binnenkant van de) dikke darm van buitenaf onderzocht worden.

Vorige Volgende

UNIVERSITEIT TWENTE.

Darmkanker screening

Einde

100%

Hartelijk dank voor het invullen van deze enquête!

21. Heeft u nog opmerkingen? Dan kunt u dit hieronder aangeven.

Als u HIER op klikt wordt in een nieuw scherm de website van de Universiteit Twente geopend.

Vergeet niet hieronder op de knop 'Gereed' te drukken om de enquête op de juiste manier af te sluiten.

Vorige Gereed

APPENDIX 2: DEMOGRAPHIC INFORMATION

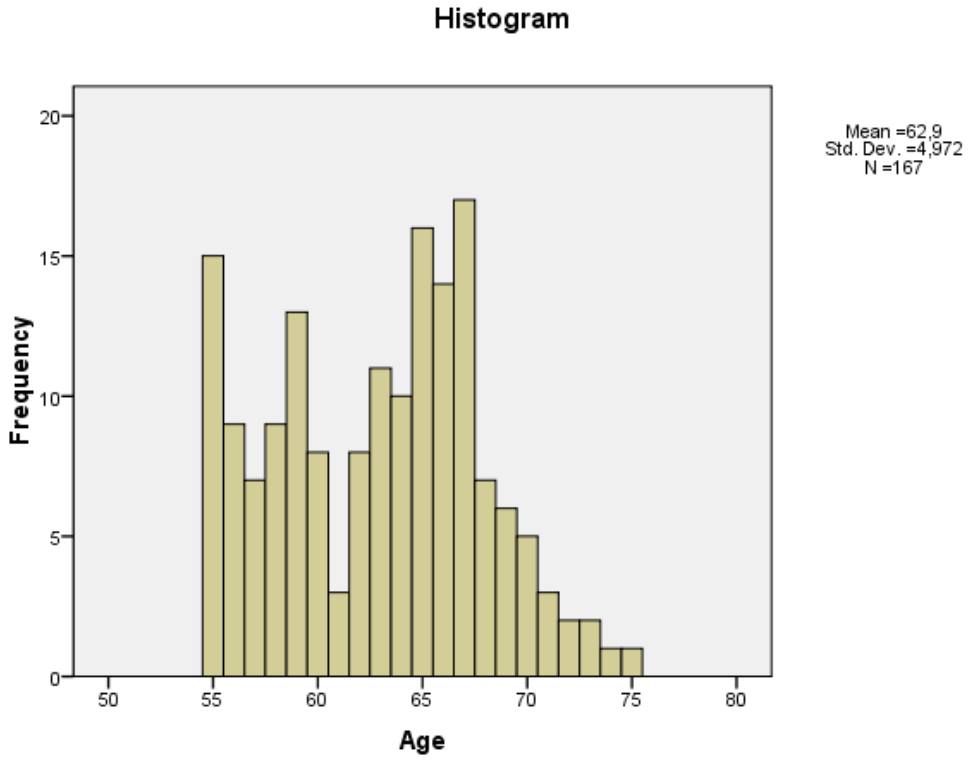
Gender

Conclusion * Gender Crosstabulation

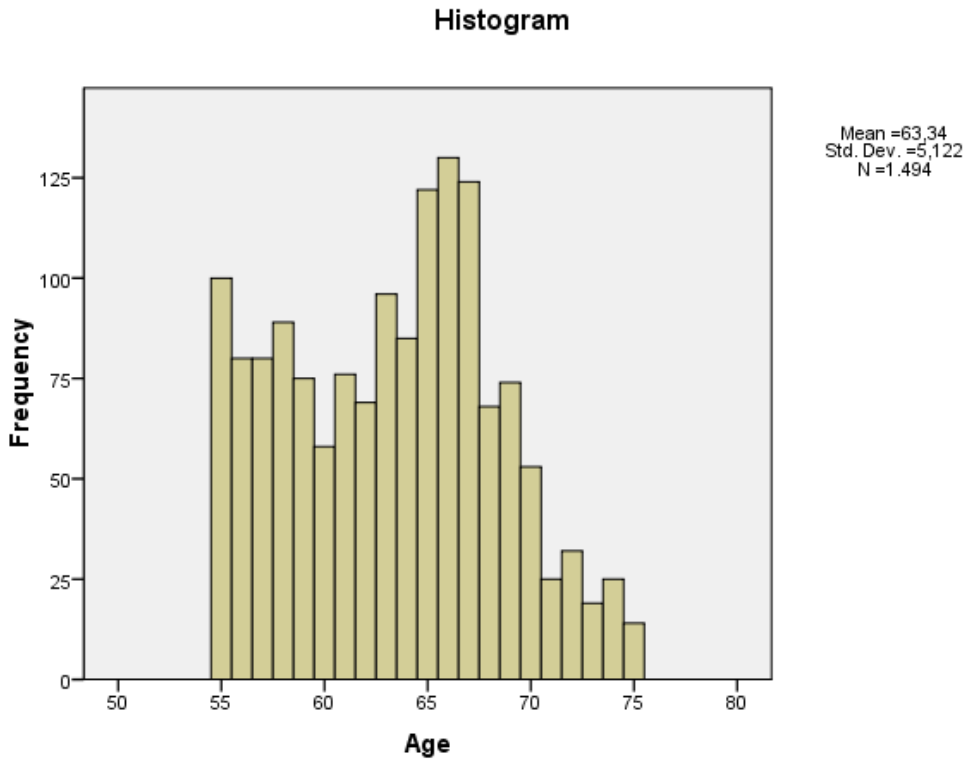
			Gender		
			Male	Female	Total
Study population	Excluded on excl. criteria	Count	124	86	210
		% within Gender	14,8%	13,1%	14,1%
	Inconsistent	Count	253	230	483
		% within Gender	30,2%	35,1%	32,3%
	Incomplete	Count	358	276	634
		% within Gender	42,7%	42,1%	42,4%
	Included	Count	104	63	167
		% within Gender	12,4%	9,6%	11,2%
	Total	Count	839	655	1494
		% within Gender	100,0%	100,0%	100,0%

Age

Like expected, there are more people aged 55-65 that filled in the questionnaire than people aged 66-75. Though, this division is less present than anticipated: 30% of the sample consists of people aged 65-70. See the histogram below for a more detailed overview.



The histogram below shows the age of all 1494 invited respondents. We see almost the same pattern as in the histogram above. This means that there is no age-related selective non-response.



Education

Data on respondent education is given on a 7-point scale of Dutch education levels. Dutch education levels cannot be matched one on one with education levels in England or the United States. The table below shows the education scales Survey Sampling International uses in The Netherlands, England and the United States to give some clarification of the Dutch system.

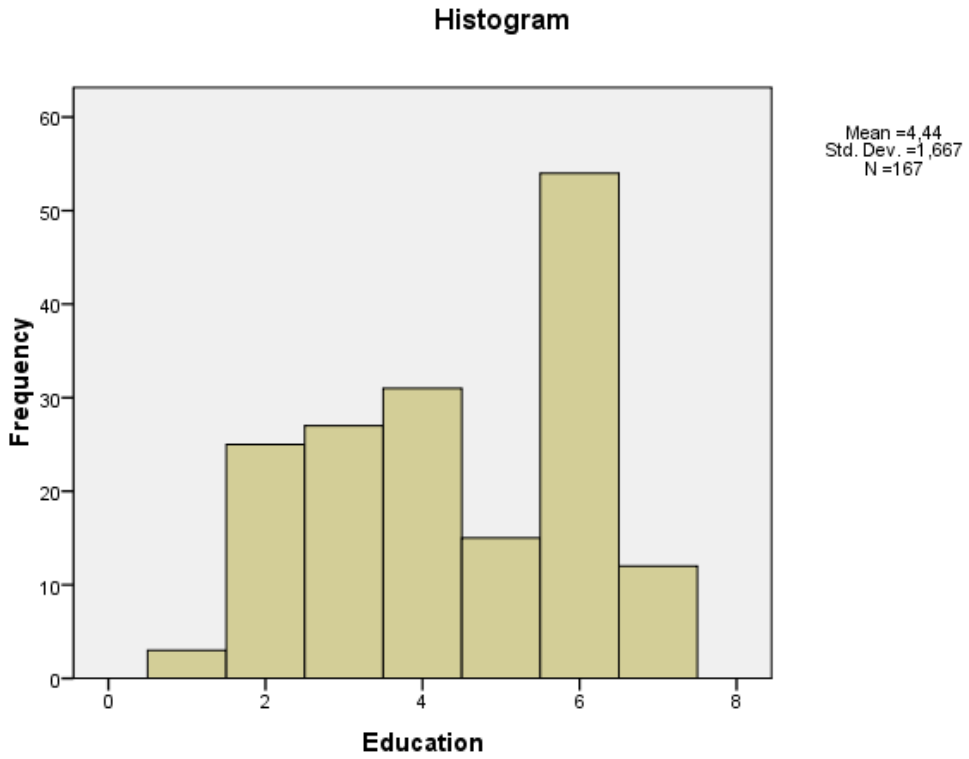
	The Netherlands	**United States**	**England**
1	**LO** (basisschool, lagere school, LAVO, VGLO)	Completed some high school	Combined Junior and Infant School/ Infant School
2	**LBO** (VMBO basis/kader, LBO, LTS, ITO, LEAO, Huishoudschool, LLO)	High school graduate	Junior School
3	**MAO** (VMBO GL/TL, MAVO, IVO, MULO, ULO, 3jr HBS, 3jr VWO, 3jr VHMO)	Completed some college	Comprehensive School
4	**MBO** (MTS, UTS, MEAO, ROC)	College degree	Comprehensive School (GCSE)/ Secondary Modern (GCSE)/ Grammar School (GSCE)/ City Technology College (CGSE)/ Sixth Form
5	**HAO** (HAVO, VWO, Atheneum, Gymnasium, NMS, HBS, Lyceum)	Completed some postgraduate	College and Institution of Higher education
6	**HBO** (HTS, HEAO, Wetensch. kand., Univers. onderwijs kand., Bachelor)	Master's degree	Open College -College of Technology- Institute/ Teacher Training College
7	**WO** (Universitair onderwijs, Doctoraalopleiding, TH, Master)	Doctorate, law or professional degree	University/ Open University

The level of education is known from 1487 of all the 1494 (95,5%) invited respondents. The table below shows that the percentage included respondents is higher for HBO and WO and is lowest for LO. The main reason seems to be that the percentage of respondents who did not fill in the questionnaire is higher for the lower education levels.

Conclusion * Education Crosstabulation

			Education							
			LO (1)	LBO (2)	MAO (3)	MBO (4)	HAO (5)	HBO (6)	WO (7)	Total
Study population	Excluded on excl. criteria	Count	6	34	47	41	18	50	11	207
		% within Education	8,8%	13,1%	14,0%	12,3%	12,9%	17,5%	17,2%	13,9%
	Inconsistent	Count	20	80	109	110	56	85	21	481
		% within Education	29,4%	30,8%	32,4%	32,9%	40,3%	29,7%	32,8%	32,3%
	Incomplete	Count	39	121	153	151	50	97	20	631
		% within Education	57,4%	46,5%	45,5%	45,2%	36,0%	33,9%	31,2%	42,4%
	Included	Count	3	25	27	32	15	54	12	168
		% within Education	4,4%	9,6%	8,0%	9,6%	10,8%	18,9%	18,8%	11,3%
	Total	Count	68	260	336	334	139	286	64	1487
		% within Education	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%

Looking at all 167 included respondents we see that there are far more HBO than LO respondents and there are also less HAO and WO respondents. Though, we can also see that all education levels are accounted for.



APENDIX 3: AHP

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	AHP Score iFOBT - AHP Score Virtual Colonoscopy	-,10001	,27276	,02111	-,14168	-,05833	-4,738	166	,000
Pair 2	AHP Score iFOBT - AHP Score Colonoscopy	,03879	,22238	,01721	,00481	,07276	2,254	166	,026
Pair 3	AHP Score iFOBT - AHP Score Sigmoidoscopy	,08462	,20963	,01622	,05259	,11664	5,216	166	,000
Pair 4	AHP Score Virtual Colonoscopy - AHP Score Colonoscopy	,13879	,22236	,01721	,10482	,17277	8,066	166	,000
Pair 5	AHP Score Virtual Colonoscopy - AHP Score Sigmoidoscopy	,18462	,17374	,01344	,15808	,21117	13,732	166	,000
Pair 6	AHP Score Colonoscopy - AHP Score Sigmoidoscopy	,04583	,11749	,00909	,02788	,06378	5,041	166	,000

APPENDIX 4: DIRECT RANKING

One-Sample Test

	Test Value = 2.5					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Rank iFOBT	-6,101	166	,000	-,542	-,72	-,37
Rank Colonoscopy	3,582	166	,000	,249	,11	,39
Rank Sigmoidoscopy	11,546	166	,000	,734	,61	,86
Rank Virtual Colonoscopy	-5,325	166	,000	-,440	-,60	-,28

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Rank iFOBT - Rank Virtual Colonoscopy	-,102	1,878	,145	-,389	,185	-,701	166	,485
Pair 2	Rank iFOBT - Rank Colonoscopy	-,790	1,707	,132	-1,051	-,530	-5,984	166	,000
Pair 3	Rank iFOBT - Rank Sigmoidoscopy	-1,275	1,663	,129	-1,530	-1,021	-9,909	166	,000
Pair 4	Rank Virtual Colonoscopy - Rank Colonoscopy	-,689	1,635	,127	-,938	-,439	-5,442	166	,000
Pair 5	Rank Virtual Colonoscopy - Rank Sigmoidoscopy	-1,174	1,517	,117	-1,405	-,942	-9,999	166	,000
Pair 6	Rank Colonoscopy - Rank Sigmoidoscopy	-,485	1,251	,097	-,676	-,294	-5,011	166	,000

APPENDIX 5: IMPACT ON QUALITY OF LIFE

The first paired samples t-test shows that the impact on quality of life was significantly for all screening methods at 99% CI

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	QOL_iFOBT – QOL_current	**-2,234**	9,592	,742	-3,699	-,768	-3,009	166	,003
Pair 2	QOL_Colonoscopy - QOL_current	**-7,2036**	15,5135	1,2005	-9,5738	-4,8334	-6,001	166	,000
Pair 3	QOL_Sigmoidoscopie - QOL_current	**-7,491**	15,229	1,178	-9,818	-5,164	-6,357	166	,000
Pair 4	QOL_Virtual_Colonoscopy - QOL_current	**-3,012**	11,231	,869	-4,728	-1,296	-3,466	166	,001

The Paired Samples T-Test below shows if the respondents significantly indicated a different impact on quality of life for two screening methods.

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	QOL_change_ iFOBT - QOL_change_ Virtual_Colonoscopy	0,778	9,593	0,742	-0,687	2,244	1,049	166	,296
Pair 2	QOL_change_ iFOBT – QOL_change_ Colonoscopy	4,970	12,884	0,997	3,002	6,939	4,985	166	,000
Pair 3	QOL_change_ iFOBT – QOL_change_ Sigmoidoscopy	5,257	10,906	0,844	3,591	6,924	6,229	166	,000
Pair 4	QOL_change_ Virtual_Colonoscopy - QOL_change_Colonoscopy	4,192	10,713	0,829	2,555	5,828	5,056	166	,000
Pair 5	QOL_change_ Virtual_Colonoscopy – QOL_change_Sigmoidoscopy	4,479	10,126	0,784	2,932	6,026	5,716	166	,000
Pair 6	QOL_change_Colonoscopy – QOL_change_Sigmoidoscopy	0,287	8,413	0,651	-0,998	1,573	,442	166	,659

APPENDIX 6: INTENTION TO ATTEND

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Attend iFOBT - Attend Colonoscopy	,964	1,005	,078	,810	1,118	12,392	166	**,000**
Pair 2	Attend iFOBT - Attend Sigmoidoscopy	1,012	1,064	,082	,849	1,175	12,289	166	**,000**
Pair 3	Attend iFOBT - Attend Virtual_Colonoscopy	,275	,929	,072	,133	,417	3,831	166	**,000**
Pair 4	Attend Virtual_Colonoscopy - Attend Colonoscopy	,689	,937	,073	,545	,832	9,495	166	**,000**
Pair 5	Attend Virtual_Colonoscopy - Attend Sigmoidoscopy	,737	,958	,074	,590	,883	9,933	166	**,000**
Pair 6	Attend Colonoscopy - Attend Sigmoidoscopy	,048	,648	,050	-,051	,147	,956	166	**,340**

APPENDIX 7: SENSITIVITY ANALYSIS

A large number of respondents is excluded because their answers on the AHP questions are inconsistent. It is possible that this group answered questions differently than the included group. Below are the results of all respondents who filled in the questionnaire on the four scales and the deviation from the original values.

AHP – ALL RESPONDENTS

	Original scores (only included respondents)	Scores All respondents	Difference
iFOBT	0,26	0,22	-0,04
Colonoscopy	0,22	0,21	-0,01
Sigmoidoscopy	0,17	0,20	0,02
Virtual Colonoscopy	0,36	0,38	0,03

The final scores in the table above are computed by combining the preferences and priorities where the priorities function as weighting factors. The values for all respondents are not that different from the original values and show us again that the respondents favour Virtual Colonoscopy mostly, followed by iFOBT, Colonoscopy and Sigmoidoscopy when measured with AHP.

INTENTION TO ATTEND – ALL RESPONDENTS

	Original mean (only included respondents)	Mean All respondents	Difference
iFOBT	0,98	0,89	-0,09
Colonoscopy	0,02	0,16	0,14
Sigmoidoscopy	-0,03	0,10	0,13
Virtual Colonoscopy	0,71	0,73	0,02

The averages of the ratings in the table above show us which screening method is mostly preferred: the higher the mean, the more probable they would attend the screening. The values for all respondents are not that different from the original values and show us again that the respondents favour iFOBT mostly, followed by Virtual Colonoscopy, Colonoscopy and Sigmoidoscopy when measured with the intention to attend scale.

DIRECT RANKING – ALL RESPONDENTS

	Original mean (only included respondents)	Mean All respondents	Difference
iFOBT	1,96	2,06	0,10
Colonoscopy	2,75	2,63	-0,12
Sigmoidoscopy	3,23	3,08	-0,15
Virtual Colonoscopy	2,03	2,23	0,20

The averages of the ranks in the table above show us which screening method is mostly preferred: the lower the mean, the more they like that screening method. The values for all respondents are not that different from the original values and all values moved closer to 2,5. This is the middle of the scale (1-4) and this indicates that the answers are more random. Still the averages show us that the respondents favour iFOBT mostly, followed by Virtual Colonoscopy, Colonoscopy and Sigmoidoscopy.

QUALITY OF LIFE – ALLE RESPONDENTS

	Original mean (only included respondents)	Mean All respondents	Difference
iFOBT	-2,23	-3,45	-1,22
Colonoscopy	-7,2	-6,47	0,73
Sigmoidoscopy	-7,49	-6,80	0,69
Virtual Colonoscopy	-3,01	-3,62	-0,61

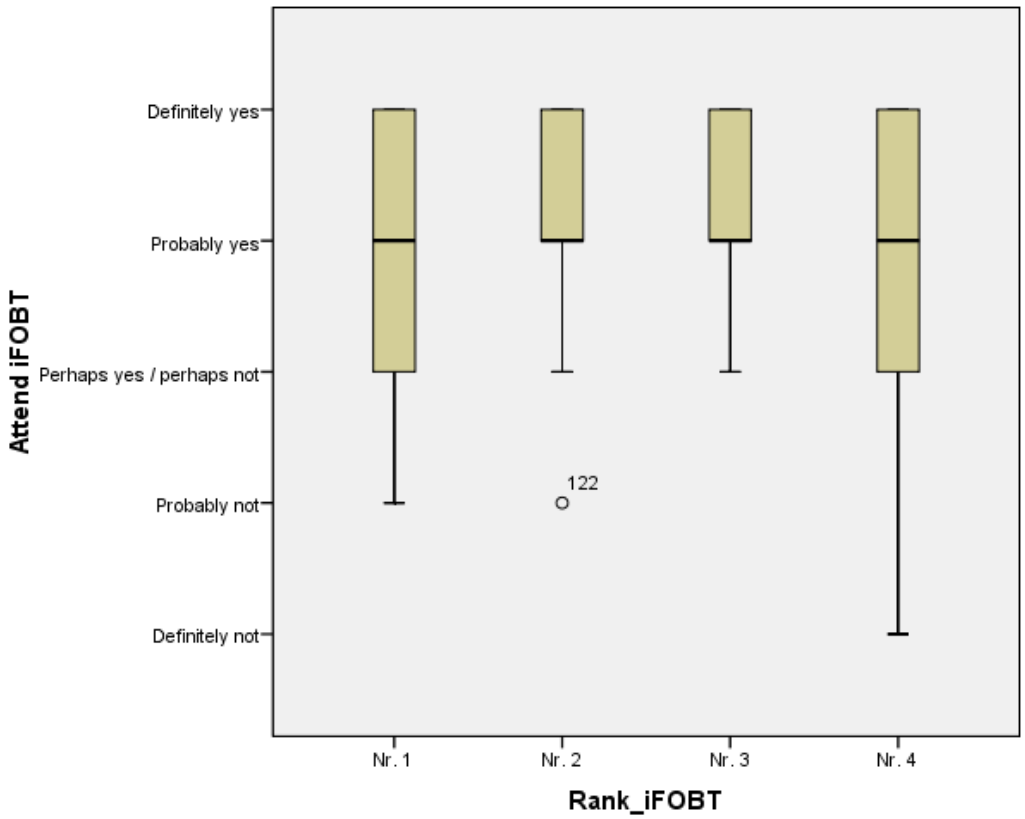
The average impact on quality of life in the table above shows us which screening method is mostly preffered: the lower the mean, the higher the impact on quality of life, the less that screening method is preferred. The values for all respondents are different from the original values and all values moved closer to each other. This indicates that the answers are more random. Still the averages show us that the respondents favour iFOBT mostly, followed by Virtual Colonoscopy, Colonoscopy and Sigmoidoscopy.

APPENDIX 8: CORRELATIONS

COMPARING INTENTION TO ATTEND AND DIRECT RANKING

The 5-point scale to measure intention to attend ranges from -2 to 2. The direct ranking method uses a 4-point scale from 1 to 4. It would be logical that respondents who like a certain screening method rank this method as number 1 or 2 and indicate more positively that they would attend the screening. Respondents who do not like a certain method would rank this method as 3 or 4 and would indicate less positively or negatively that they would attend the screening. This can be represented by a boxplot and the Kendall's tau-c.

IFOBT



Attend iFOBT * Rank_iFOBT Crosstabulation

			Rank_iFOBT				
			Nr. 1	Nr. 2	Nr. 3	Nr. 4	Total
Attend iFOBT	Definitely not	Count	0	0	0	1	1
		% within Rank_iFOBT	,0%	,0%	,0%	3,4%	,6%
	Probably not	Count	11	1	0	2	14
		% within Rank_iFOBT	13,1%	2,9%	,0%	6,9%	8,4%
	Perhaps yes / perhaps not	Count	13	6	3	10	32
		% within Rank_iFOBT	15,5%	17,1%	15,8%	34,5%	19,2%
	Probably yes	Count	33	13	7	7	60
		% within Rank_iFOBT	39,3%	37,1%	36,8%	24,1%	35,9%
	Definitely yes	Count	27	15	9	9	60
		% within Rank_iFOBT	32,1%	42,9%	47,4%	31,0%	35,9%
	Total	Count	84	35	19	29	167
		% within Rank_iFOBT	100,0%	100,0%	100,0%	100,0%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	17,355[a]	12	,137
Likelihood Ratio	17,243	12	,141
Linear-by-Linear Association	,022	1	,882
N of Valid Cases	167		

a. 8 cells (40,0%) have expected count less than 5. The minimum expected count is ,11.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	**Kendall's tau-c**	**,018**	,063	,288	,773
	Spearman Correlation	,023	,080	,297	,767[c]
Interval by Interval	Pearson's R	-,011	,083	-,147	,883[c]
N of Valid Cases		167			

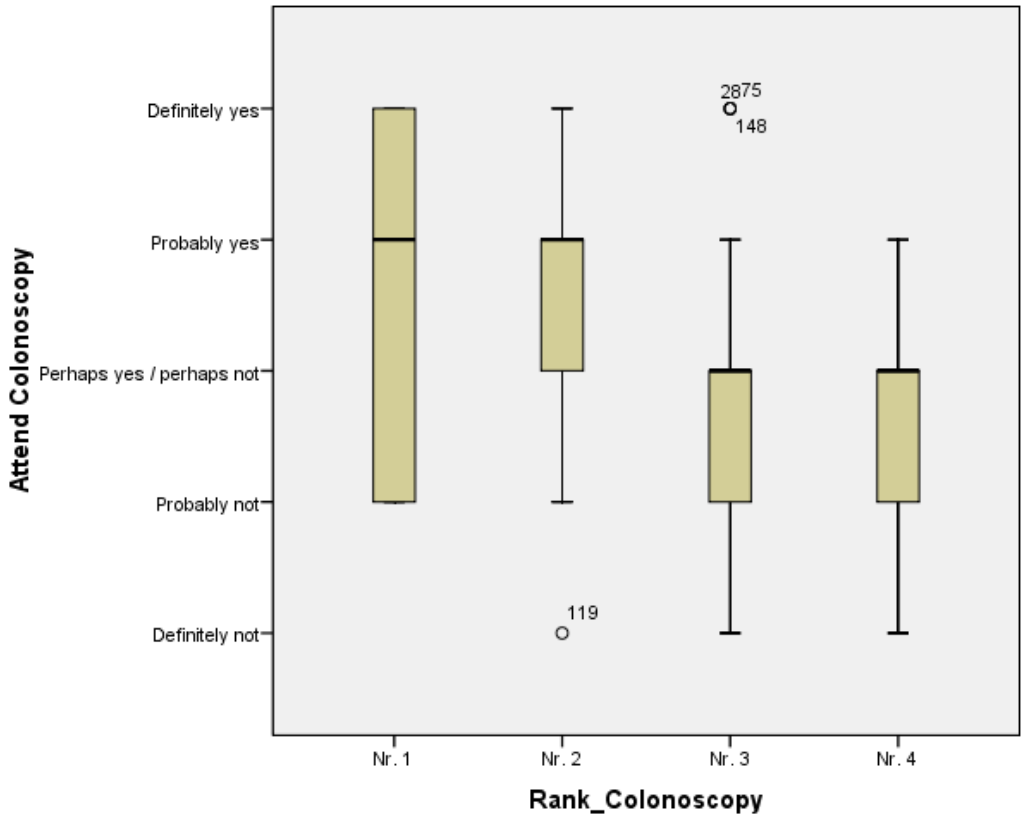
a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

The very low and also insignificant Kendall's tau-c correlation coefficient confirms what the boxplot and table show: there is hardly a relation between the ranking of iFOBT and the indication to attend the screening with iFOBT. The respondents who give iFOBT a higher rank (rank 1 is higher than rank 4) do not indicate more often that they would probably or definitely attend the screening.

Colonoscopy



Attend Colonoscopy * Rank_Colonoscopy Crosstabulation

			Rank_Colonoscopy				
			Nr. 1	Nr. 2	Nr. 3	Nr. 4	Total
Attend Colonoscopy	Definitely not	Count	0	1	4	4	9
		% within Rank_Colonoscopy	,0%	2,1%	5,9%	11,1%	5,4%
	Probably not	Count	5	9	22	10	46
		% within Rank_Colonoscopy	33,3%	18,8%	32,4%	27,8%	27,5%
	Perhaps yes / perhaps not	Count	0	13	28	18	59
		% within Rank_Colonoscopy	,0%	27,1%	41,2%	50,0%	35,3%
	Probably yes	Count	4	20	11	4	39
		% within Rank_Colonoscopy	26,7%	41,7%	16,2%	11,1%	23,4%
	Definitely yes	Count	6	5	3	0	14
		% within Rank_Colonoscopy	40,0%	10,4%	4,4%	,0%	8,4%
	Total	Count	15	48	68	36	167
		% within Rank_Colonoscopy	100,0%	100,0%	100,0%	100,0%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	48,370[a]	12	,000
Likelihood Ratio	48,260	12	,000
Linear-by-Linear Association	20,688	1	,000
N of Valid Cases	167		

a. 9 cells (45,0%) have expected count less than 5. The minimum expected count is ,81.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	**Kendall's tau-c**	**-,274**	,063	-4,348	,000
	Spearman Correlation	-,332	,074	-4,524	,000[c]
Interval by Interval	Pearson's R	-,353	,072	-4,847	,000[c]
N of Valid Cases		167			

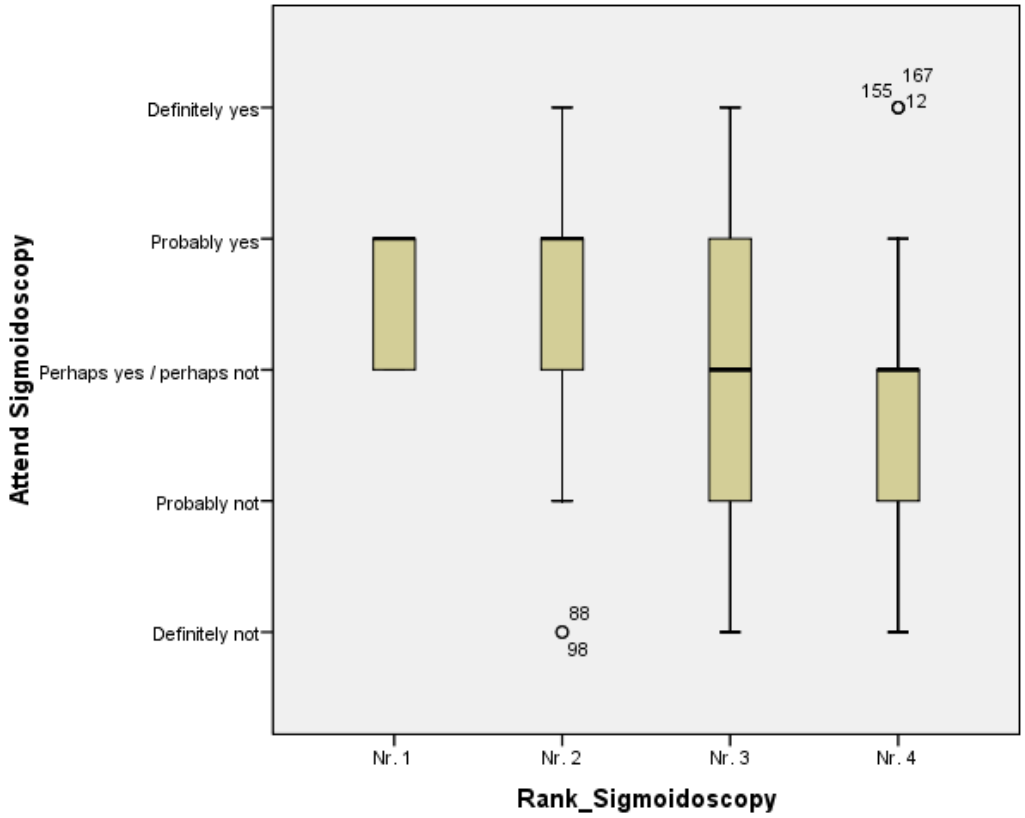
a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

The Kendall's tau-c correlation coefficient is significant but seems low but, as mentioned before, in societal or behavioural research it can be regarded as a fair relation. The table clarifies this: 67% of the respondents who rank Colonoscopy as number 1 indicate they will definitely or probably attend the screening while of the respondents who rank colonoscopy as number 4 only 11% indicate this. The respondents who give Colonoscopy a higher rank (rank 1 is higher than rank 4) do indicate more often that they would probably or definitely attend the screening.

Sigmoidoscopy



Attend Sigmoidoscopy * Rank_Sigmoidoscopy Crosstabulation

			Rank_Sigmoidoscopy				
			Nr. 1	Nr. 2	Nr. 3	Nr. 4	Total
Attend Sigmoidoscopy	Definitely not	Count	0	2	4	8	14
		% within Rank_Sigmoidoscopy	,0%	7,7%	6,6%	10,7%	8,4%
	Probably not	Count	0	3	14	23	40
		% within Rank_Sigmoidoscopy	,0%	11,5%	23,0%	30,7%	24,0%
	Perhaps yes / perhaps not	Count	2	2	26	31	61
		% within Rank_Sigmoidoscopy	40,0%	7,7%	42,6%	41,3%	36,5%
	Probably yes	Count	3	14	14	10	41
		% within Rank_Sigmoidoscopy	60,0%	53,8%	23,0%	13,3%	24,6%
	Definitely yes	Count	0	5	3	3	11
		% within Rank_Sigmoidoscopy	,0%	19,2%	4,9%	4,0%	6,6%
	Total	Count	5	26	61	75	167
		% within Rank_Sigmoidoscopy	100,0%	100,0%	100,0%	100,0%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	35,696[a]	12	,000
Likelihood Ratio	36,381	12	,000
Linear-by-Linear Association	16,488	1	,000
N of Valid Cases	167		

a. 9 cells (45,0%) have expected count less than 5. The minimum expected count is ,33.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	**Kendall's tau-c**	**-,255**	,061	-4,192	,000
	Spearman Correlation	-,321	,074	-4,347	,000[c]
Interval by Interval	Pearson's R	-,315	,071	-4,266	,000[c]
N of Valid Cases		167			

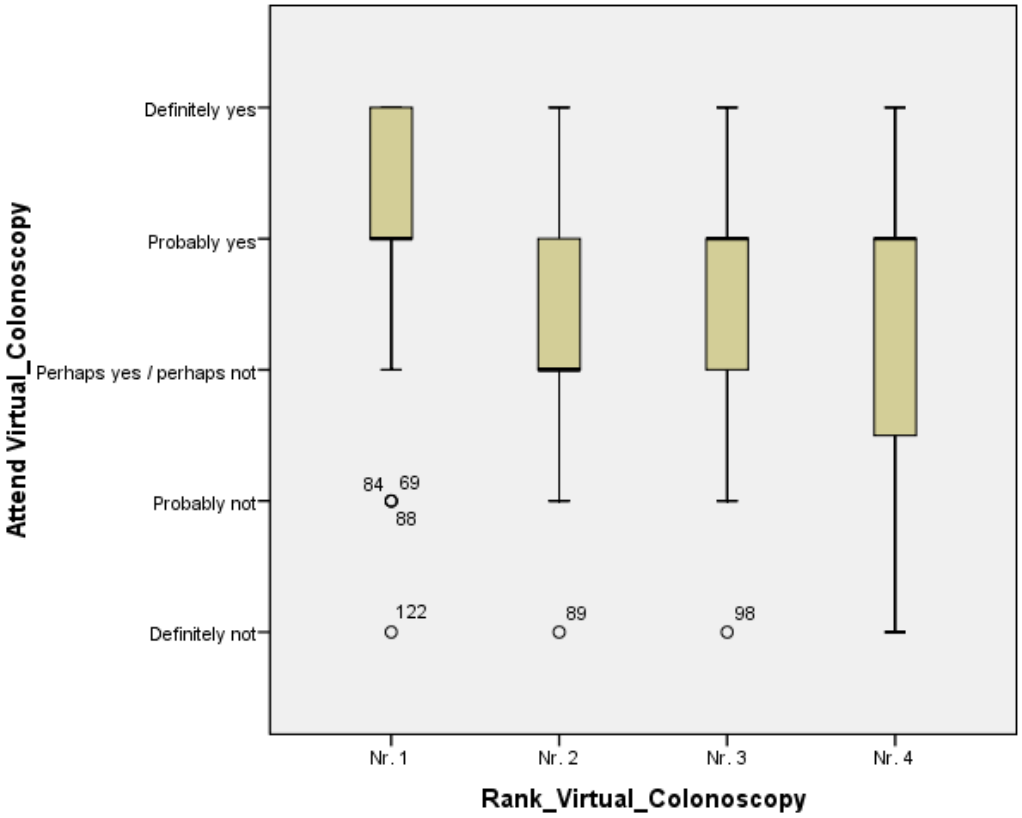
a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

The Kendall's tau-c correlation coefficient is significant and it can be regarded as a fair relation. The table clarifies this: 60% of the respondents who rank Sigmoidoscopy as number 1 indicate they will definitely or probably attend the screening while of the respondents who rank colonoscopy as number 4 only 17% indicate this. The respondents who give Sigmoidoscopy a higher rank (rank 1 is higher than rank 4) do indicate more often that they would probably or definitely attend the screening.

Virtual Colonoscopy



Attend Virtual_Colonoscopy * Rank_Virtual_Colonoscopy Crosstabulation

			Rank_Virtual_Colonoscopy				
			Nr. 1	Nr. 2	Nr. 3	Nr. 4	Total
Attend Virtual_Colonoscopy	Definitely not	Count	1	1	1	2	5
		% within Rank_Virtual_Colonoscopy	1,6%	1,7%	5,3%	7,4%	3,0%
	Probably not	Count	3	6	1	5	15
		% within Rank_Virtual_Colonoscopy	4,8%	10,3%	5,3%	18,5%	9,0%
	Perhaps yes / perhaps not	Count	6	23	4	6	39
		% within Rank_Virtual_Colonoscopy	9,5%	39,7%	21,1%	22,2%	23,4%
	Probably yes	Count	32	22	10	9	73
		% within Rank_Virtual_Colonoscopy	50,8%	37,9%	52,6%	33,3%	43,7%
	Definitely yes	Count	21	6	3	5	35
		% within Rank_Virtual_Colonoscopy	33,3%	10,3%	15,8%	18,5%	21,0%
	Total	Count	63	58	19	27	167
		% within Rank_Virtual_Colonoscopy	100,0%	100,0%	100,0%	100,0%	100,0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	29,242[a]	12	,004
Likelihood Ratio	28,881	12	,004
Linear-by-Linear Association	9,874	1	,002
N of Valid Cases	167		

a. 8 cells (40,0%) have expected count less than 5. The minimum expected count is ,57.

Symmetric Measures

		Value	Asymp. Std. Error[a]	Approx. T[b]	Approx. Sig.
Ordinal by Ordinal	**Kendall's tau-c**	**-,221**	,062	-3,545	,000
	Spearman Correlation	-,273	,076	-3,639	,000[c]
Interval by Interval	Pearson's R	-,244	,080	-3,230	,001[c]
N of Valid Cases		167			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

c. Based on normal approximation.

The Kendall's tau-c correlation coefficient is significant and it can be regarded as a fair relation. The table clarifies this: 84% of the respondents who rank Virtual Colonoscopy as number 1 indicate they will definitely or probably attend the screening while 52% of the respondents who rank colonoscopy as number 4 indicate this. The respondents who give Virtual Colonoscopy a higher rank (rank 1 is higher than rank 4) do indicate more often that they would probably or definitely attend the screening.

COMPARINGIMPACT ON QUALITY OF LIFE AND INTENTION TO ATTEND

The 5-point scale to measure intention to attend ranges from -2 to 2. The quality of life scale ranges from 0 to 100. The quality of life change for each screening method is computed by taking difference between the quality of life from that screening method and the current quality of life. This new scale gives a negative value if the perceived quality of life drops by participating the screening. It would be logical that respondents who perceive a relative large drop in quality of life would give a negative score on the intention to attend scale: they would definitely or probably not attend the screening. Respondents who perceive a relative small drop (or even an increase) in quality of life would give a positive score on the intention to attend scale: they would definitely or probably attend the screening. First shown are some descriptive statistics on the computed quality of life scores.

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Impact on QOL - iFOBT	167	-60,00	20,00	-2,23	9,59
Impact on QOL - Colonoscopy	167	-85,00	20,00	-7,20	15,51
Impact on QOL - Sigmoidoscopy	167	-70,00	20,00	-7,49	15,23
Impact on QOL - Virtual Colonoscopy	167	-60,00	20,00	-3,01	11,23

Correlations

			IFOBT	Colonoscopy	Sigmoidoscopy	Virtual Colonoscopy
Spearman's rho	Impact on quality of life – Intention to Attend	Correlation Coefficient	,240**	,327**	,351**	,302**
		Sig. (2-tailed)	,002	,000	,000	,000
		N	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

All correlations are low or medium and significant and the relation between the quality of life scores and the intention to attend scores can be regarded as a fair. The respondents who perceive a relative large drop in quality of life do indicate more often that they would probably not or definitely not attend the screening than respondents who perceive a relative small drop (or even increase) in quality of life.

COMPARING QUALITY OF LIFE AND DIRECT RANKING

The 4-point scale for direct ranking ranges from 1 to 4 where rank 1 is higher than rank 4. The quality of life scale ranges from 0 to 100. The quality of life for each screening method is computed by taking difference between the quality of life from that screening method and the current quality of life. This new scale gives a negative value if the perceived quality of life drops by participating the screening. It would be logical that respondents who perceive a relative large drop in quality of life would give a lower rank (3 or 4) to that screening method. Respondents who perceive a relative small drop (or even an increase) in quality of life would give a higher rank (1 or 2) to that screening method.

Correlations

			Rank_iFOBT	Rank_Colonoscopy	Rank_Sigmoidoscopy	Rank_Virtual_Colonoscopy
Spearman's rho	Impact on quality of life – direct ranking	Correlation Coefficient	,078	-,174*	-,191*	-,201**
		Sig. (2-tailed)	,318	,024	,013	,009
		N	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Most correlations (except iFOBT) are low but significant. This means there is a weak relation between the quality of life scores and the ranks. The respondents who perceive a relative large drop in quality of life give lower ranks (3 and 4) to that screening method than respondents who perceive a relative small drop (or even increase) in quality of life. This relation is not significant for iFOBT.

Comparing AHP and Intention to Attend

Correlations

			AHP Score iFOBT	SENSITIVITY AHPpref iFOBT	SPECIFICITY AHPpref iFOBT	SAFETY AHPpref iFOBT	INCONVENIENCE AHPpref iFOBT	FREQUENCY AHPpref iFOBT
Spearman's rho	Attend iFOBT	Correlation Coefficient	,029	-,034	,029	,038	,139	,016
		Sig. (2-tailed)	,713	,663	,711	,627	,074	,833
		N	167	167	167	167	167	167

There seems to be no significant correlation between the AHP scores and change in intention to attend scores for iFOBT.

Correlations

			AHP Score Colonoscopy	SENSITIVITY AHPpref Colonoscopy	SPECIFICITY AHPpref Colonoscopy	SAFETY AHPpref Colonoscopy	INCONVENIENCE AHPpref Colonoscopy	FREQUENCY AHPpref Colonoscopy
Spearman's rho	Attend Colonoscopy	Correlation Coefficient	,180*	,111	,165*	,160*	,130	,219**
		Sig. (2-tailed)	,020	,153	,033	,039	,093	,004
		N	167	167	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

There seems to be a small but significant correlation between the AHP scores and change in intention to attend scores for Colonoscopy, but not for the AHP scores on sensitivity and inconvenience.

Correlations

			AHP Score Sigmoidoscopy	SENSITIVITY AHPpref Sigmoidoscopy	SPECIFICITY AHPpref Sigmoidoscopy	SAFETY AHPpref Sigmoidoscopy	INCONVENIENCE AHPpref Sigmoidoscopy	FREQUENCY AHPpref Sigmoidoscopy
Spearman's rho	Attend Sigmoidoscopy	Correlation Coefficient	,113	,010	,163*	,153*	,163*	,274**
		Sig. (2-tailed)	,145	,894	,036	,048	,035	,000
		N	167	167	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

There seems to be no significant correlation between the overall AHP scores and change in intention to attend scores for Sigmoidoscopy, though the correlation between the AHP scores on specificity, safety, inconvenience and frequency and intention to attend are significant but small.

Correlations

			AHP Score Virtual Colonoscopy	SENSITIVITY AHPpref Virtual Colonoscopy	SPECIFICITY AHPpref Virtual Colonoscopy	SAFETY AHPpref Virtual Colonoscopy	INCONVENIENCE AHPpref Virtual Colonoscopy	FREQUENCY AHPpref Virtual Colonoscopy
Spearman's rho	Attend Virtual Colonoscopy	Correlation Coefficient	,276**	,259**	,058	,227**	,216**	,228**
		Sig. (2-tailed)	,000	,001	,454	,003	,005	,003
		N	167	167	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

There seems to be a significant correlation between the AHP scores and change in intention to attend scores for Virtual Colonoscopy, except for the AHP score on specificity.

Most correlations above are not significant so overall the AHP scores and intention to attend do not correlate well, though it correlates better than the AHP scores do with change in quality of life.

Comparing AHP and Direct Ranking

Correlations

			AHP Score iFOBT	SENSITIVITY AHPpref iFOBT	SPECIFICITY AHPpref iFOBT	SAFETY AHPpref iFOBT	INCONVENIENCE AHPpref iFOBT	FREQUENCY AHPpref iFOBT
Spearman's rho	Rank iFOBT	Correlation Coefficient	-,350**	-,215**	-,244**	-,197*	-,183*	-,273**
		Sig. (2-tailed)	,000	,005	,001	,011	,018	,000
		N	167	167	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

There seems to be a significant correlation between the AHP scores and the direct ranking for iFOBT.

Correlations

			AHP Score Colonoscopy	SENSITIVITY AHPpref Colonoscopy	SPECIFICITY AHPpref Colonoscopy	SAFETY AHPpref Colonoscopy	INCONVENIENCE AHPpref Colonoscopy	FREQUENCY AHPpref Colonoscopy
Spearman's rho	Rank Colonoscopy	Correlation Coefficient	-,327**	-,298**	-,211**	-,262**	-,221**	-,248**
		Sig. (2-tailed)	,000	,000	,006	,001	,004	,001
		N	167	167	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

There seems to be a significant correlation between the AHP scores and the direct ranking for Colonoscopy.

Correlations

			AHP Score Sigmoidoscopy	SENSITIVITY AHPpref Sigmoidoscopy	SPECIFICITY AHPpref Sigmoidoscopy	SAFETY AHPpref Sigmoidoscopy	INCONVENIENCE AHPpref Sigmoidoscopy	FREQUENCY AHPpref Sigmoidoscopy
Spearman's rho	Rank Sigmoidoscopy	Correlation Coefficient	-,164*	-,146	-,126	-,247**	-,179*	-,157*
		Sig. (2-tailed)	,034	,059	,103	,001	,021	,042
		N	167	167	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

There seems to be a significant correlation between the AHP scores and the direct ranking for Sigmoidoscopy, but the AHP scores for sensitivity and specificity do not have a significant correlation with the direct ranking.

Correlations

			AHP Score Virtual Colonoscopy	SENSITIVITY AHPpref Virtual Colonoscopy	SPECIFICITY AHPpref Virtual Colonoscopy	SAFETY AHPpref Virtual Colonoscopy	INCONVENIENCE AHPpref Virtual Colonoscopy	FREQUENCY AHPpref Virtual Colonoscopy
Spearman's rho	Rank Virtual Colonoscopy	Correlation Coefficient	-,415**	-,408**	-,161*	-,299**	-,355**	-,306**
		Sig. (2-tailed)	,000	,000	,038	,000	,000	,000
		N	167	167	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

There seems to be a significant correlation between the AHP scores and the direct ranking Virtual Colonoscopy.

Almost all correlations are significant and most of the correlation for the overall AHP scores with direct ranking are above 0,3. Hence we can say that they to correlate pretty well.

Correlations (average)

			AHP Score (average)	SENSITIVITY AHPpref (average)	SPECIFICITY AHPpref (average)	SAFETY AHPpref (average)	INCONVENIENCE AHPpref (average)	FREQUENCY AHPpref (average)
Spearman's rho	Rank (averages)	Correlation Coefficient	-,314	-,267	-0,186	-,251**	-,235	-,246
		N	4*167	4*167	4*167	4*167	4*167	4*167

Since all correlations are computed from 167 respondents, we can simply take the averages to see which AHP criterion correlates best. The overall AHP score correlates best with the direct ranking, followed by the scores on the criteria sensitivity, safety, frequency, inconvenience and specificity.

Comparing AHP and Quality of life

Correlations

		AHP Score iFOBT	SENSITIVITY AHPpref iFOBT	SPECIFICITY AHPpref iFOBT	SAFETY AHPpref iFOBT	INCONVENIENCE AHPpref iFOBT	FREQUENCY AHPpref iFOBT
Quality of Life iFOBT	Pearson Correlation	,036	,072	,089	,060	,036	,086
	Sig. (2-tailed)	,648	,353	,252	,443	,641	,270
	N	167	167	167	167	167	167

Correlations

			AHP Score iFOBT	SENSITIVITY AHPpref iFOBT	SPECIFICITY AHPpref iFOBT	SAFETY AHPpref iFOBT	INCONVENIENCE AHPpref iFOBT	FREQUENCY AHPpref iFOBT
Spearman's rho	Quality of Life iFOBT	Correlation Coefficient	-,060	,052	-,003	-,018	-,025	,002
		Sig. (2-tailed)	,443	,503	,967	,820	,745	,975
		N	167	167	167	167	167	167

There seems to be no significant correlation between the AHP scores and change in quality of life for iFOBT.

Correlations

		AHP Score Colonoscopy	SENSITIVITY AHPpref Colonoscopy	SPECIFICITY AHPpref Colonoscopy	SAFETY AHPpref Colonoscopy	INCONVENIENCE AHPpref Colonoscopy	FREQUENCY AHPpref Colonoscopy
Quality of Life Colonoscopy	Pearson Correlation	,112	,087	,089	,020	,035	,007
	Sig. (2-tailed)	,148	,265	,255	,801	,652	,924
	N	167	167	167	167	167	167

Correlations

			AHP Score Colonoscopy	SENSITIVITY AHPpref Colonoscopy	SPECIFICITY AHPpref Colonoscopy	SAFETY AHPpref Colonoscopy	INCONVENIENCE AHPpref Colonoscopy	FREQUENCY AHPpref Colonoscopy
Spearman's rho	Quality of Life Colonoscopy	Correlation Coefficient	,071	,041	,065	,026	,060	,118
		Sig. (2-tailed)	,360	,598	,406	,735	,439	,128
		N	167	167	167	167	167	167

There seems to be no significant correlation between the AHP scores and change in quality of life for Colonoscopy.

Correlations

		AHP Score Sigmoidoscopy	SENSITIVITY AHPpref Sigmoidoscopy	SPECIFICITY AHPpref Sigmoidoscopy	SAFETY AHPpref Sigmoidoscopy	INCONVENIENCE AHPpref Sigmoidoscopy	FREQUENCY AHPpref Sigmoidoscopy
Quality of Life Sigmoidoscopy	Pearson Correlation	,051	-,021	,146	,002	,179*	,059
	Sig. (2-tailed)	,514	,784	,059	,985	,020	,446
	N	167	167	167	167	167	167

*. Correlation is significant at the 0.05 level (2-tailed).

Correlations

			AHP Score Sigmoidoscopy	SENSITIVITY AHPpref Sigmoidoscopy	SPECIFICITY AHPpref Sigmoidoscopy	SAFETY AHPpref Sigmoidoscopy	INCONVENIENCE AHPpref Sigmoidoscopy	FREQUENCY AHPpref Sigmoidoscopy
Spearman's rho	Quality of Life Sigmoidoscopy	Correlation Coefficient	,054	,002	,130	,079	,219**	,154*
		Sig. (2-tailed)	,490	,982	,094	,310	,004	,047
		N	167	167	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

There seems to be no significant correlation between the AHP scores and change in quality of life for Sigmoidoscopy, except for the correlation with the AHP score on inconvenience.

Correlations

		AHP Score Virtual Colonoscopy	SENSITIVITY AHPpref Virtual Colonoscopy	SPECIFICITY AHPpref Virtual Colonoscopy	SAFETY AHPpref Virtual Colonoscopy	INCONVENIENCE AHPpref Virtual Colonoscopy	FREQUENCY AHPpref Virtual Colonoscopy
Quality of Life Virtual Colonoscopy	Pearson Correlation	,258**	,074	,025	,233**	,236**	,280**
	Sig. (2-tailed)	,001	,341	,744	,002	,002	,000
	N	167	167	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

			AHP Score Virtual Colonoscopy	SENSITIVITY AHPpref Virtual Colonoscopy	SPECIFICITY AHPpref Virtual Colonoscopy	SAFETY AHPpref Virtual Colonoscopy	INCONVENIENCE AHPpref Virtual Colonoscopy	FREQUENCY AHPpref Virtual Colonoscopy
Spearman's rho	Quality of Life Virtual Colonoscopy	Correlation Coefficient	,342**	,151	,118	,251**	,322**	,322**
		Sig. (2-tailed)	,000	,052	,128	,001	,000	,000
		N	167	167	167	167	167	167

**. Correlation is significant at the 0.01 level (2-tailed).

There seems to be a significant correlation between the AHP scores and change in quality of life for Virtual Colonoscopy, but not for the AHP scores on sensitivity and specificity.

Most correlations above are not significant so overall the AHP scores and change in quality of life do not correlate well.