

Tailored implementation strategy for the Distress Thermometer

A case study

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Dutch summary

Achtergrond: De Distress Thermometer (DT) is een gevalideerd screening instrument voor kankerpatiënten op een klinische afdeling van een algemeen ziekenhuis. Onderzoek naar implementatie strategieën is nog niet gedaan. Een op maat gemaakte implementatie strategie is veelbelovend. Daarom wordt in deze studie onderzocht wat de effectiviteit van een op maat gemaakte implementatiestrategie is, gebaseerd op het Innovatie Contingentie (IC) model. Ook worden ervaringen van dit proces beschreven.

Methoden: Eén groep pre-test-post-test case studie werd uitgevoerd van januari tot mei 2012. Deelnemers bestonden uit 44 verpleegkundigen van de afdeling Interne Oncologie. Kwantitatieve gegevens zijn verzameld door drie vragenlijsten over kenmerken van de innovatie (WIK), kenmerken van de organisatie (WOK) en de implementatie effectiviteit vragenlijst (IEQ). Ook werden patiëntendossiers onderzocht. Bovendien werd de tevredenheid van deelnemers gemeten voor en na de uitvoering van het IC-model. Kwalitatieve gegevens zijn verzameld door middel van vier individuele interviews over ervaringen van de deelnemers.

Resultaten: Het gebruik van het IC model heeft een klein maar consistent effect. De deelnemers waren meer tevreden over de DT na de uitvoering van het IC-model, volgens de verschillende VAS scores. Er zijn meer ingevulde DT gevonden in patiëntdossiers wat zou kunnen worden uitgelegd als een effect van het gebruik van het IC-model. Uit resultaten van de individuele gesprekken bleek dat de deelnemers op veel verschillende manieren geïnformeerd zijn en positief denken over de DT en het gebruik van het IC-model.

Conclusies: We kunnen concluderen dat het gebruik van het IC-model een klein maar consistent effect heeft. Een op maat gemaakte implementatie strategie kan een goede oplossing zijn, rekening houdend met de innovatie en de organisatie. Echter het is belangrijk om rekening te houden met de complexiteit van op maat gemaakte implementatie strategieën.

English abstract

Background: The Distress Thermometer (DT) is a validated screening instrument for cancer patients at a clinical department of a general hospital. Implementation of the DT is not investigated. Tailored implementation is promising. Therefore in this study, we observed the effectiveness of a tailored implementation strategy, based on the Innovation Contingency (IC) model and experiences of this process.

Methods: A one group pre- test – post- test study was conducted from January to May 2012. Participants consisted of 44 nurses of the department. Quantitative data was collected using three questionnaires about characteristics of the innovation (WIK) and characteristics of the organization (WOK). Moreover, the Implementation Effectiveness Questionnaire (IEQ) was used. Furthermore, patient files were investigated and the satisfaction of participants is measured before and after the use of the tailored implementation strategy. Qualitative data was collected during four individual interviews about experiences of participants.

Results: Overall, the use of the IC model indicated a small but consistent effect. The participants were more satisfied about the DT after implementing the DT using the IC model, according to the different VAS scores. There are found more completed DT in patient files which could be explained as an effect of using the IC model. The outcomes of the individual interviews showed that participants are informed in many different ways and have a positive thought about the DT and the use of the IC model. Overall, differences are mainly occurred on individual level and less on group level.

Conclusions: We can conclude that the use of the IC model showed a small but consistent effect. A tailored implementation strategy might be a good solution taking account of the innovation and the organization. However, it is important to take account into the complexity of tailored implementation strategies.

Introduction

Each year about 75,000 adult patients are diagnosed with cancer in the Netherlands. Because of the aging population, it is expected that in 2015 each year about 95,000 new cancer patients will be diagnosed (1). Cancer patients experience psychological and social consequences in addition to physical consequences. The term distress can be used to summarize the burden cancer patients can experience on emotional, social, practical, philosophical and physical areas. The National Comprehensive Cancer Network (2) defines distress as follows: 'a multifactorial unpleasant emotional experience of a psychological (cognitive, behavioral, emotional), social and/or spiritual nature that may interfere with the ability to cope effectively with cancer, its physical symptoms and its treatment. Distress extends along a continuum ranging from common normal feelings of vulnerability, sadness and fears to problems that can become disabling such as depression, anxiety, panic, social isolation and existential and spiritual crisis'(2).

This is disturbing since it has been demonstrated that patients experiencing distress have a lower quality of life and are less satisfied with the medical care they have received (3). Referral to a psychosocial specialist is needed in 25 to 50% of all adult cancer patients who experience distress (4,5). This is why early detection of distress is important (3). Without systematic observation there is a great chance to underdiagnoses and undertreatment of distress.

The National Psychosocial Care Guide team, which consisted of a professor, psychologists, sociologists and nursing specialists, has investigated ten existing and validated screening instruments to measure distress. The Distress Thermometer with problem list (DT) is the only screening instrument the team particularly recommended. It is the only screening instrument that is comprehensive and focuses both at physical and psychosocial problems (6).

The DT is a validated instrument meant for cancer patients to provide insight into the extent of their distress by drawing a circle around a number on the thermometer in the first part. The second part determines whether patients have experienced problems in the last week on several areas such as pain or family problems (7,8).

In the hospital, psychosocial care is most frequently provided by nurses by which the DT can be used as a screening instrument. It is recommended for nurses to discuss the completed DT immediately with the patient and to discuss patients who score ≥ 5 in a structured multidisciplinary consultation with specialized clinicians, basic paramedical and psychosocial clinicians.

In several national and international studies, the effect of the DT is investigated (7,9,10). However, there is certainly not one description about the implementation of the DT. Therefore, in practice it is still uncertain what implementation strategy is effective for implementing the DT. In general, tailored implementation approaches show hopeful results (11-15). The implementation is tailored to the nature of the innovation, the setting and the target group, based on possible barriers and facilitators (16,17).

In this study a theoretical framework that has tailoring as its core is used and explained in figure1; the Innovation Contingency (IC) model of Van Linge. (Figure 1) (18).

-----*insert figure 1 here*-----

This model is grounded on the relation between the innovation and the influencing factors. “This model assumes that congruity between the demands of that innovation and characteristics of the context is necessary for a successful implementation. Tailored implementation strategies can be used to bridge discrepancies between requisite and existing conditions.”(19)

The model is founded on three components. First a configuration approach. A configuration is a complex set of characteristics of a system. With innovation processes, various systems are involved, the innovation, the organization, the external environment and the persons concerned (20).

The second is formed by theories about stratification of the systems. Innovations contain a number of operational characteristics (the innovation in action), explicit values as expressed in the goals pursued with an innovation, and basal views associated with the underlying innovation. When these layers fit mutual in, the innovation is a configuration.

The third is formed by the strategy contingency approach with regard to variation and innovation in organizations. Briefly stated, there is not one best way to innovate, but there are several ways that each can be effective, but under different conditions (20).

Problem statement

The DT is a valid screening instrument for measuring distress. Implementation of the DT is occurred more frequently, however more research is still needed. Tailored implementation is promising. Therefore in this study, we investigated the effect of a tailored implementation strategy, based on the IC model.

Aim

The aim of this study was to gain more insight into the use of the IC model for the DT in cancer patients at a clinical department of a general hospital and to improve the use of the DT by using the IC model.

Research question

What is the effect of using the IC model regarding the implementation of the DT for cancer patients staying at the clinical department of a general hospital and how is this process experienced by participants?

Methods

Design and study population

A one group pre-test - post-test case study was conducted from January to May 2012 using a component mixed methods design (21). The implementation process of the IC model will be analyzed by means of a process evaluation (22). The design and research process are explained in figure 2.

-----*insert figure 2 here*-----

For this study, a convenience sample consisted of the clinical department Internal Oncology of a general hospital. In this sample, the purposeful sample consisted of nurses of a clinical department Intern Oncology of a general hospital in the Netherlands. Inclusion criteria included nurses who completed Vocational Education (In Dutch MBO) or Higher Vocational Education (In Dutch: HBO). Exclusion criteria contained (a) nurses working as standby employee and (b) nurses who were more than two weeks absent during the study. The participants were recruited and informed during a meeting, by e-mail, the website and a newsletter of the department including information about the study.

A random sample of 74 patient files was used (21).

Data collection

Socio- demographic data of participants were collected at baseline. Including: age, level of education, years of experience, number of years working at the department and percentage of employment.

Quantitative data was collected using the Visual Analogue Scale (VAS) score (1 to 10) for participants. In this way the satisfaction about the use of the DT is measured, before and after implementing the IC model. (23-25).

Furthermore using three questionnaires: 1) analyzing the characteristics of the innovation, in Dutch WIK, 2) analyzing the characteristics of the organization, in Dutch WOK which are based on the IC model and were designed in the 'Implementing Nursing Innovations' research line of the Nursing Science discipline group at Utrecht University (18) and 3) the Implementation Effectiveness Questionnaire (IEQ).

The WIK and WOK lead to four configuration scores: degree of team focus, degree of development focus, degree of rule focus and degree of result focus. Both questionnaires originally consisted of 24 items. The WOK with Cronbach's alpha's between 0.70 and 0.91 for the four configurations (26-28) and earlier unpublished studies for the WIK resulted in a Cronbach's Alpha's between 0.70 en 0.75 for the four configurations (26). In this study the shortened version of 12 propositions was used which had to be answered on a five-point Likert scale from 'I totally disagree' (1) to 'I totally agree' (5). The topics in the WIK contained the method of use, purpose and perceived image of the innovation. The topics in the WOK contained organization structure, policy and culture.

The IEQ consisted of 14 items which had to be answered on a five-point Likert scale from 'I totally disagree' (1) to 'I totally agree' (5). This questionnaire contains: items on knowledge, motivation, satisfaction, communication, support and solving problems. This questionnaire is meant for testing effectiveness of implementation of an innovation. An earlier unpublished study for this questionnaire resulted in a Cronbach's alpha's of 0.90 (29).

Patient files were investigated to gain insight in the use of the DT by nurses. The department can accommodate a maximum of 37 patients. During pre-test, 37 different patient files were investigated. We looked into the presence of the filled in DT in every file. During post-test, data collection is repeated with 37 other patient files. There were two possible options: The DT in the file was filled in or not.

Qualitative data was collected to understand perspectives of participants, the contextual factors and the process determining the DT. Semi- structured individual interviews included experiences of the introduction of the DT in the past, experiences of the tailored implementation process, barriers and opportunities of implementation. A topic list was used.

The opening question was: “what do you think of the intervention DT?”. Two key persons, a nurse and the manager were selected. The key persons are nurses who originally started with the introduction of the DT.

Study procedures

The WIK and WOK questionnaires were completed for every configuration. A configuration profile and after that a fit- analysis was completed. To analyse the outcomes from the questionnaires, a summary sheet was used which assumed that there is a fair consensus between the perceptions of those who have completed the questionnaires. First the results of the WIK were measured. There could be a single internal fit of the innovation (in one of four configurations a score was 4 or higher) or a multiple internal fit of the innovation (the innovation include for all levels two or more configurations). Second the results of the WOK were measured. The same applied for single and multiple internal fit identical for the department. Third, the external fit was investigated. This can only be done if there is also internal fit. Based on the results an implementations strategy follows.

At T=0, the WIK showed a single internal fit of the organization of the configuration teamwork and no external fit. This means that participants experienced obscurity about the interpretation of the intervention, in this case the DT(18). Further analyses showed a weak picture of the innovation (mostly a three is scored by participants on both questionnaires). Furthermore, there is little variance, therefore this picture is shared by participants. This is an indication for the use of the diffusion-communication strategy. For more explanation of the strategy a conversation took place with R. van Linge, designer of the questionnaires. The strategy is also supported using the model of Rogers (30). This means that an innovation that is entered had to be diffused to a particular target group and context. This means that the implementation plan has the potential to provide relief in concrete implementation problems in specific care sectors and in the search of alternatives if a particular approach does not work.

The interviews were audiotaped. The interviews were conducted in the second half of the study. In this way, the participants had more knowledge about the new implementation strategy, the IC model. The interviews were conducted by the investigator face-to-face with participants.

Analysis

All quantitative data obtained were analyzed by using Statistical Packages or Social Sciences (SPSS), version 18.0 (31). Analysis focused at the differences between the results of the WIK, WOK, file search and VAS scores on the two measurement moments using descriptive statistics. Moreover, the different scores of the WIK pre- and post- test were tested according to the Mann- Whitney test. The different scores of the WOK pre- and post- test were tested according to the Wilcoxon test. Furthermore the correlation between the WIK and the IEQ was considered using Spearman's correlation coefficient (31). Qualitative data was analyzed using NVIVO(32).

Internal validity

A mixed methods design has the ability to gain enhanced validity (21). The researcher made field notes about observed obvious aspects in practice and by collecting interviews. Also the researcher provided feedback to participants about interpretations. Furthermore, thick and conceptualized description and researcher credibility was used to enhance the internal validity (21).

Ethics

The study was approved by the Isala Clinics in The Netherlands by the Medical Ethics Review Committee (METC).

Results

All 44 employed nurses of the department Intern Oncology were included in the study. Seventy percent completed the WIK at T=0 and 23 % completed the WIK at T=1. A hundred per cent completed the WOK at T=0 and 67% completed the WOK at T=1. Thirty- four percent of the participants completed the IEQ. Reasons for non- response were not investigated. At T=0, the mean age of participants of the WIK was 33 years and 94 % of the participants were female. The mean age of participants of the WOK was 35 years and 66% of the participants were female. At T= 1, the mean age of participants who completed the WIK was 32 years and 90% were female. Demographic characteristics of participants are presented in table 1.

-----insert table 1 here-----

Configurations

Based on statistic tests and a small sample the data is not normally distributed therefore, non-parametric tests were used. For every test the WIK is divided into four subscales which described the four configurations to be exact: degree of team focus, degree of development focus, degree of rule focus and degree of result focus. Also the IEQ is divided into three subscales to be exact: individual level, group level and patient level. The scores of the WIK and WOK are both increasing on the configuration degree of team focus and degree of result focus. Table 2 presented scores of all participants for both questionnaires at the two measuring moments.

-----insert table 2 here-----

There were 27 participants who completed the WIK at T = 0 and ten participants who completed the WIK at T = 1. The outcomes showed significant differences on the configuration degree of team oriented focus and degree of development focus. Three participants completed the WOK both on T=0 and T=1. The outcomes showed no significant differences. The results of the Mann- Whitney and the Wilcoxon rank test are shown in table 3.

-----insert table 3 here-----

Implementation effect

The mean scores of the IEQ overall was 3,41 (SD 0.85) with a range from 1 -5. The mean score of the subscale on individual level was 3.6, on the subscale group level 3.1 and on the subscale patient level 3.4. The lowest average, which means that the implementation effect is small, is scored on the question which is about how problems are solved between the manager and the participant when using the DT (2.33) and the question about the managers support that is experienced when using the DT (2.40). The highest average is scored on the question about satisfaction with the contribution of the DT to quality of care (4.20) and satisfaction with the simplicity of the use of the DT (4.20). Figure 3 showed the mean scores for every item of the questionnaire.

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Satisfaction of participants

At T=0 the mean VAS score of 31 participants on the level of satisfaction of working with the DT was 5.6 (SD 1.03) with a range from 4- 7. At T=1 the mean VAS score of eight participants was 7.3 with a range from 6- 9.

Patient file search

At T=0 file search showed one completed DT of 37 files. At T=1 file search showed four completed DT of 37 different files.

The WIK and the IEQ

The only significant positive correlation ($r_s = .634$; $p .049$) is found between two subscales of the questionnaire implementation effectiveness. A higher score for the subscale individual level showed higher scores for the subscale group level. There was no fair correlation found between subscales of the WIK and the IEQ. Results are showed in table 4.

-----insert table 4 here-----

Intervention based on implementation strategy

The content of the intervention consisted of informing and clarifying procedures and requirements and also to motivate and to speak to participants. This was done by means of two clinical lessons and one presentation with and without participation.

Individual interviews

Four semi- structured interviews were analyzed. The following two categories are created: opportunities and barriers. The participants considered the DT as a tool and a useful screening instrument. One participant said: "There is certainly looked at psychosocial care, what otherwise doesn't come up for discussion, you can discover with the DT". There were also a number of barriers mentioned: for example too little attention for coaching and feedback in practice, change of staff, obscurity about a fixed evaluation moment.

Discussion

Overall, the use of the IC model indicated a small but consistent effect. The outcomes of the WIK showed significant differences on all four configurations. Also scores of WOK are increasing on two configurations. The increasing scores could be

explained by the positive effect of the implementation strategy. The participants were more satisfied about the DT after implementing the DT using the IC model, according to the different VAS scores. There are found more completed DT in patient files which could be explained as an effect of using the IC model. The outcomes of the individual interviews showed that participants are informed in many different ways and have a positive thought about the DT and the use of the IC model. Overall, differences are mainly occurred on individual level and less on group level.

Strengths

A comprehensive mixed methods design is applied with many different parameters. In this way there is an obvious perception of the effect of implementing the IC model and the process what is proceed (21).

In this study, a tailored implementation strategy is used and showed positive results for the use of the DT. The findings of other studies indicate that tailored implementation of interventions led to improvements in practice(15,33). To be exact, the diffusion- innovation strategy is used to implement the DT, which provided a structure to the process regarding different ways of communication with participants about the implementation of the DT (30). Moreover, other studies required well-defined strategies when considering implementation (34).

In this study a description of the process of implementation is provided, including a short description of the implementation strategy and the experiences of participants. This is essential for understanding the success or failure of an implementation strategy and it is recommended by other studies (15,18,35,36)(20).

Limitations

A couple of study limitations are the relative small population and the use of non-parametric statistic tests (31). It is unclear whether the results could be generalized to other populations.

The researcher herself was one of the participants. Favorable is that the researcher is working at the same department. The researcher is therefore aware of the culture of the department and the target group. It gives the researcher the opportunity to set participants at ease and deepen out questions faster. Also the researcher is in qualitative research often the one who collected and analyzed data. Disadvantage is being a part of the department can cause subjectivity. It may also have influenced the answers on the questions during the interviews. (37).

Tailoring is also experienced as difficult. It takes time and commitment in order to prepare and accomplish implementation. Furthermore, it is important that participants are motivated and be prepared to provide support. Since tailored implementations approaches consisted of a lot of elements, it is not clear which element of the tailored strategy approach explained effectiveness (21).

One of the reasons the effect of implementing the IC model is not distinguished could be that the support and involvement of the manager of the department was less than hoped during the implementation process. This is possible because they were not aware of the importance of support during the implementation of the IC model. Literature shows the importance of leadership to support during research and evidence based practice. One study recommended cooperation between clinicians, consumers, researchers, funding agencies, and governments treatment centers, to give priority to systematic implementation in psychosocial care (15).

The researcher could have spent more attention about the importance of support from both participants and the managers during implementation. Literature described the importance for nurse managers to create strategies for supporting nurses' professional development and possibilities to implement research findings in clinical practice (38,39).

Conclusions

We can conclude that the use of the IC model showed a small but consistent effect. A tailored implementation strategy might be a good solution taking account of the innovation and the organization. Outcomes of the process evaluation showed that participants expressed themselves optimistic about the DT. However, it is important to take account into the complexity of tailored implementation strategies.

Recommendations

Further research is needed about implementing the DT with the use of the IC model using a different research design and for a longer period. We recommended the use of a comprehensive longitudinal design with repeated measurements.

More clinical research is recommended for the use of the IC model to implement the DT. It is also important that the DT will be implemented to other departments with the use of the IC model. It is important to include an elaborate evaluation of the process of implementation of a tailored strategy.

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Figure and table legends

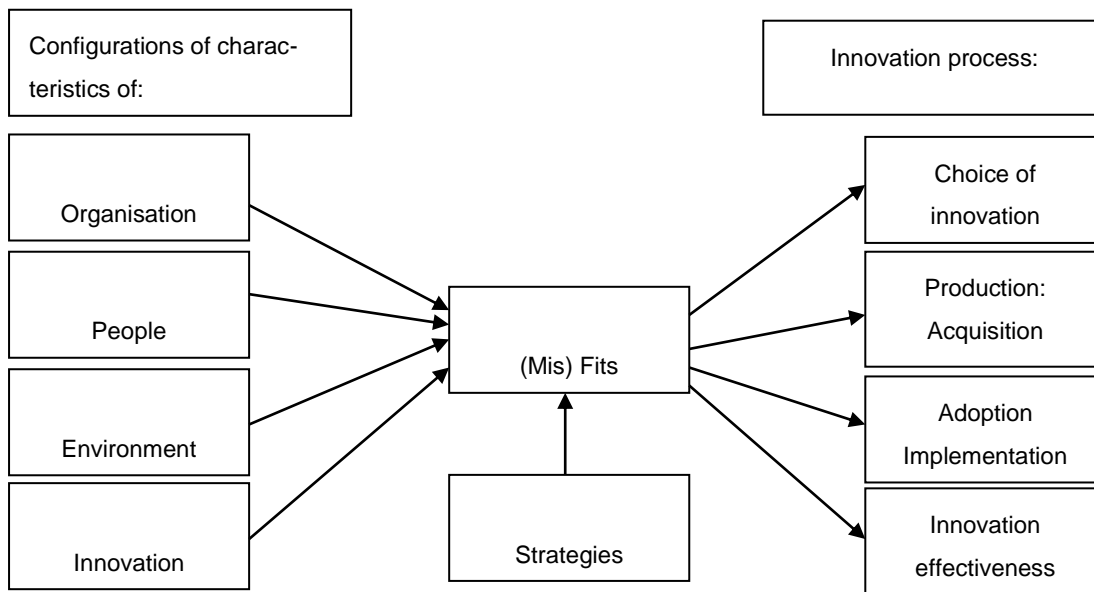


Figure 1: The Innovation Contingency Model (40).

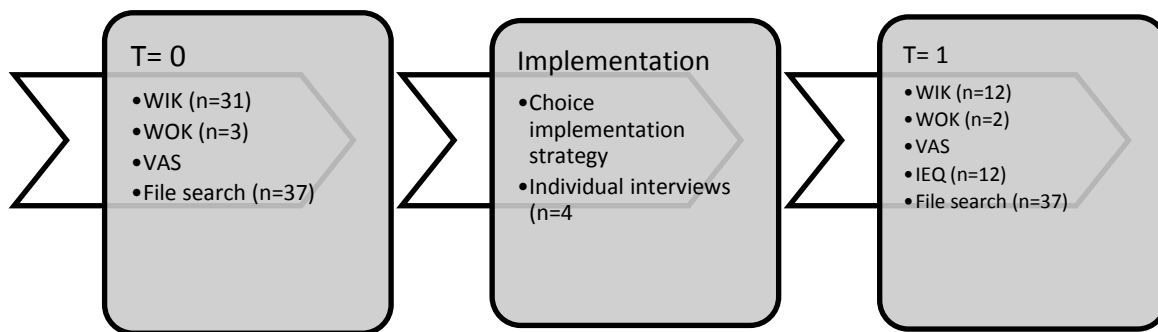


Figure 2: Design and research process

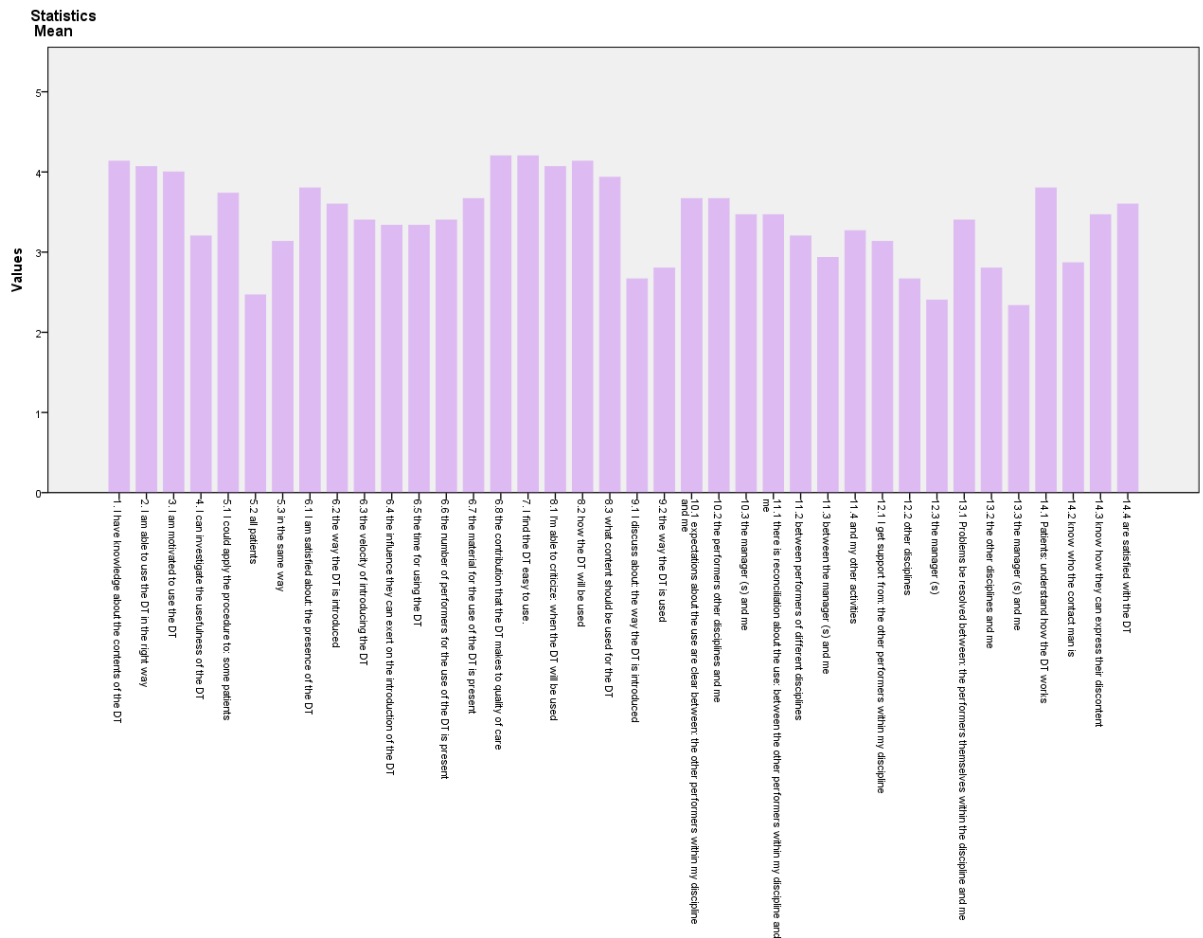


Figure 3: Results of the IEQ.

Table 1: Participants characteristics

Characteristic	WIK	N=10	WOK
	N= 31	T=1	N= 3
	T=0		
Age (years) (Mean + SD)	33 (\pm 8.89)	32 (\pm 8.62)	35 (\pm 3.521)
Gender (N, %)			
<i>Males</i>	2 (7)	1 (10)	1 (33)
<i>Females</i>	29 (94)	9 (90)	2 (66)
Highest educational level* (N, %)			
<i>Intermediate Vocational Education</i>	14 (45)	7 (70)	2 (67)
<i>Higher Vocational Education</i>	12 (39)	2 (20)	1 (33)
<i>Other</i>	5 (16)	1 (10)	0 (0)
Number of years working in health care (years) (Mean + SD)	12 (\pm 9.46)	11 (\pm 7.27)	12 (\pm 3.79)
Number of years working on department Intern Oncology care (years) (Mean + SD)	7 (\pm 6. 94)	6 (\pm 5.24)	5 (\pm 5.29)
Percentage operational (N, %)	73 (\pm 20)	77 (\pm 20.52)	86 (\pm 6.66)

* Education: Intermediate Vocational Education (in Dutch MBO), Higher Vocational Education (in Dutch: HBO) Other: Inservice education.

Table 2: Configurations

Configuration	Pre-test (T=0)	Post-test (T=1)
	Mean (SD)	Mean (SD)
Characteristics of innovation (WIK)		
	N=31	N=10
Degree of team focus	3.3 (0.89)	3.7 (0.69)
Degree of development focus	3.2 (0.99)	3.6 (0.84)
Degree of rule focus	2.8 (0.97)	3.3 (0.80)
Degree of result focus	3.0 (0.99)	3.2 (0.74)
Characteristics of the organisation (WOK)		
	N=3	N=2
Degree of team focus	4	4.2
Degree of development focus	2.8	2.8
Degree of rule focus	3	2.8
Degree of result focus	3.1	3.5
1= Totally disagree 5= Totally agree		

Table 3: Non parametric tests

Configuration	Mann Whitney U	Wilcoxon rank
	<i>WIK (n= 37)</i>	<i>WOK (n= 3)</i>
	<i>Z value (p- value)</i>	<i>Z value (p- value)</i>
Degree of team focus	-2.078 (.038)	-1.000 (.317)
Degree of development focus	-1.946 (.052)	-1.604 (.109)
Degree of rule focus	-1.735 (.083)	-1.342 (.180)
Degree of result focus	-1.903 (.274)	-1.633 (.102)

Table 4: Spearman's rho Correlation Coefficient

	Sub1 WIK	Sub2 WIK	Sub3 WIK	Sub4 WIK	Sub 1 Effect	Sub2 Effect	Sub3 Effect
Sub1 WIK	1,000	.476	-.016	-.029	.251	.316	.053
Sub2 WIK	.476	1,000	.235	.022	.379	-.065	.381
Sub3 WIK	-.016	.235	1,000	.279	.319	-.385	.048
Sub4 WIK	-.029	.022	.279	1,000	.053	-.235	-.064
Sub 1 Effect	.251	.379	.319	.053	1,000	.634*	.608
Sub2 Effect	.316	-.065	-.385	-.235	.634*	1,000	.574
Sub3 Effect	.053	.381	.048	-.064	.608	.574	1,000

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