

Implementation of research and development in primary care

by means of strategic communication

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Ineko AB

*Getting a new idea adopted,
even when it has obvious advantages,
is difficult*

Everett M. Rogers

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ABSTRACT

Background: Health and medical care today is faced with the challenge of bridging the gap between the theoretical world and the practical clinical setting. Although methods exist for implementing research results, the actual implementation process is not always optimal. Thus, in order to create a more positive attitude to research and new thinking among health care professionals, it is necessary to identify barriers and possibilities as well as explore new strategies. Strategic communication can be utilised to create knowledge of and interest in research and development (R&D) as a first step towards new thinking and willingness to change work practices, for the benefit of patients.

Aim: The overall aim of this thesis was to describe, follow up and evaluate the implementation of R&D among primary care staff by means of strategic communication.

Methods: *The intervention process.* A staff cohort comprising all employees (N=1,276) was initiated in 1997. The intervention was based on strategic communication, which is a relatively new field of knowledge. The field is interdisciplinary and the basis is a theoretical platform originating in communication science as well as sociology, psychology and political science. Oral, written and digital communication channels were used. The study design was longitudinal to allow follow-up and evaluation of the influence of strategic communication over time on staff members' intention to engage in R&D, measured 7 and 12 years after the start of the strategic communication. *The intervention context:* A primary care organisation in southwest Sweden. *Data collection and analysis:* A questionnaire comprising fixed response alternatives in combination with an open-ended question. Multivariate tests were employed to analyse the answers to the fixed response alternatives and qualitative content analysis was applied to the open-ended

question. An ethnographic study comprising observations, interviews and analysis of documents was conducted to elucidate the significance of the organisational culture in the studied context.

Results: Strategic communication contributed to almost all primary care staff gaining knowledge of R&D, more than half of whom became interested in the subject. The intervention also resulted in more than half of the primary care staff members developing new thoughts and ideas and a third of them had changed or intended to change their work practices (7 year follow-up). This positive attitude increased over time and every second staff member exhibited an intention to engage in R&D at the 12 year follow-up. All results were statistically significant. The influence of the communication channels and their synergy effect played a significant role in the change process, although to varying degrees. The organisational culture emerged as an important factor, influencing the values and attitudes in relation to the intention to engage in R&D.

Conclusion: Strategic communication contributed to a significant change among all primary care staff in terms of intention to change work practices and engage in R&D. The primary care staff members' attitude to change also developed during the 12 year intervention.

Keywords: barriers, communication channels, evidence-to-practice gap, follow-up, implementation, innovative attitudes, intervention, longitudinal study, organisational culture, primary care staff cohorts, research and development, strategic communication.

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SAMMANFATTNING PÅ SVENSKA

Implementering av forskning och utveckling i primärvården med hjälp av strategisk kommunikation

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Bakgrund: Dagens hälso- och sjukvård står inför en utmaning att överbrygga gapet mellan den teoretiska världen och den praktiska verksamheten i primärvården. Trots pågående utveckling av metoder för implementering av forskningsresultat fungerar det faktiska införandet inte alltid optimalt. Skapandet av forsknings- och utvecklingsklimat är en främjande insats på vägen. Det är därför viktigt att hitta nya strategier samt identifiera hinder och möjligheter för att bidra till en mer positiv attityd till forskning och nytänkande bland anställda inom vårdsektorn. Användning av strategisk kommunikation är ett sätt att skapa kännedom om och intresse för forskning och utveckling (FoU) som ett första steg mot nytänkande och viljan till förändring av arbetsmetoder, till patientens gagn.

Syfte: Det övergripande syftet med denna avhandling var att beskriva, följa upp och utvärdera implementeringen av FoU, baserad på strategisk kommunikation, bland primärvårdspersonal över tid.

Metoder: *Interventionsprocessen.* En personalkohort som omfattade alla anställda startades 1997 (N=1276). Interventionen var baserad på strategisk kommunikation som är ett relativt nytt kunskapsfält. Det är ett tvärvetenskapligt fält grundat på teoretisk plattform med rötter inom kommunikationsvetenskap såväl som sociologi, psykologi och statsvetenskap. De kommunikationskanaler som användes var de muntliga, skriftliga och digitala. Studien hade en longitudinell design i syfte att följa upp och utvärdera inverkan av strategisk kommunikation på anställdas FoU-intention över tid. FoU-intentionen mättes vid två tillfällen, 7 och 12 år efter starten av den strategiska kommunikationen. *Interventionskontexten:* En primärvårdsorganisation i sydvästra Sverige valdes. *Datainsamling och analys:* En enkät bestående av frågor med fasta svarsalternativ kombinerad med öppna frågor användes. Multivariata test genomfördes för analys av de fasta frågorna och en kvalitativ innehållsanalys gjordes av en öppen fråga i enkäten. En etnografisk undersökning bestående av observationer, intervjuer och dokumentanalys gjordes för att belysa organisationskulturens betydelse i sammanhanget.

Resultat: Strategisk kommunikation bidrog till att nästan alla primärvårdsanställda fick kännedom om FoU, varav drygt hälften förvärvade ett intresse för ämnet. Interventionen resulterade vidare i att mer än hälften utvecklade nya tankar och idéer och ytterligare var tredje anställd ändrade eller hade avsikten att ändra sina arbetsmetoder (7-års uppföljning). Denna positiva attityd ökade över tid där varannan anställd tog till sig förändringsintentionen (12-års utvärdering). Samtliga erhållna resultat var statistiskt säkerställda. Kommunikationskanalernas inverkan och synergieffekten bland dem, hade en signifikant roll i förändringsprocessen dock i varierande grad. Organisationskulturen framställdes som en betydande faktor för de anställdas värderingar och attityder till FoU-intentionen.

Slutsatser: Strategisk kommunikation bidrog till en signifikant implementering av FoU bland samtliga anställda. Vidare hade personalens förändringsattityd utvecklats under de 12 år som interventionen pågick.

LIST OF PAPERS

This thesis is based on the following studies (papers), referred to in the text by their Roman numerals.

- I. Morténus, H, Marklund, B, Palm, L, Fridlund, B, Baigi, A. The utilization of knowledge of and interest in research and development among primary care staff by means of strategic communication: a staff cohort study. *Journal of Evaluation in Clinical Practice*. 2012; 18:768-75. (e-pub 23 Febr, 2011)
- II. Morténus, H, Marklund, B, Palm, L, Björkelund, C, Baigi, A. The implementation of innovative attitudes and behaviour in primary health care by means of strategic communication: a seven-year follow-up. *Journal of Evaluation in Clinical Practice* 2012; 18; 659-65. (e-pub 21 Jan, 2011)
- III. Morténus, H, Baigi, A, Palm, L, Fridlund, B, Björkelund, C, Hedberg, B. Impact of the organisational culture on primary care staff members' intention to engage in research and development (submitted).
- IV. Morténus, H, Fridlund, B, Marklund, B, Palm, L, Baigi, A. Utilisation of strategic communication to create willingness to change work practices among primary-care staff: a long-term follow-up study. *Primary Health Care Research and Development* 2012; 13(2):130-41. (e-pub 30 Jan, 2012)

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CONTENTS

- DEFINITIONS..... VII
- 1 INTRODUCTION..... 1
- 2 BACKGROUND..... 3
 - 2.1 R&D in primary care..... 3
 - 2.2 Organisational readiness for implementation 6
 - 2.3 Strategic communication..... 7
 - 2.3.1 The concept of strategic communication 7
 - 2.3.2 The information process 8
 - 2.3.3 Organisational culture..... 8
 - 2.3.4 Organisational structure..... 10
 - 2.3.5 Diffusion of innovation 11
- 3 AIM..... 13
- 4 METHODS..... 14
 - 4.1 Study design..... 15
 - 4.2 Study context 16
 - 4.2.1 SWOT analysis of the surrounding environment..... 16
 - 4.2.2 Target group analysis 17
 - 4.2.3 Analysis of organisational culture 18
 - 4.3 The 12 year intervention 18
 - 4.3.1 The communication strategy..... 19
 - 4.4 Study population 23
 - 4.4.1 Staff cohort..... 23
 - 4.5 Papers I, II and IV 23
 - 4.5.1 Instrument..... 23
 - 4.5.2 Power calculation 25
 - 4.5.3 Data collection..... 26
 - 4.5.4 Data analysis 26

4.6	Paper III	29
4.6.1	Observations, interviews and document analysis.....	29
4.6.2	Data collection.....	29
4.6.3	Data analysis	30
4.7	Ethical considerations	32
5	RESULTS	34
5.1	Validity and reliability (Papers I, II and IV).....	34
5.2	From knowledge to change (Papers I and II).....	36
5.2.1	Staff cohort.....	36
5.2.2	Creation of new attitudes.....	38
5.2.3	The role of the communication channels in changing attitude	39
5.2.4	The role of direct and indirect communication	40
5.2.5	The impact of the strategic communication among SEI groups..	41
5.2.6	Identification of barriers	41
5.3	Influence of the organisational culture (Paper III).....	43
5.3.1	Organisational culture in primary care	43
5.4	Change in behaviour in the long term (Paper IV).....	45
5.4.1	Staff cohort.....	45
5.4.2	Stable development in terms of change in attitude	45
5.4.3	Improved communication channel utilisation.....	45
5.4.4	Improved communication and change in attitude	47
5.4.5	The role of synergy.....	48
5.4.6	Years of practice as an important factor	48
5.4.7	Profiling of the R&D Ambassador network	49
5.5	The final evaluation of the cohort	49
6	DISCUSSION	51
6.1	Method issues	51
6.2	Result discussion.....	55
6.2.1	Knowledge and interest	55
6.2.2	The role of the organisational culture	59

6.2.3	New thinking and willingness to change	62
6.3	General discussion	65
6.3.1	A long-term investment	65
6.3.2	Care production in competition with R&D	65
6.3.3	Bridging the gap between policy and R&D	66
6.3.4	Strategic communication as a significant tool.....	67
7	CONCLUSION.....	70
8	FUTURE PERSPECTIVES.....	72
8.1	Practical perspectives	72
8.2	Research perspectives	72
8.3	Organisational perspectives.....	72
	ACKNOWLEDGEMENT.....	76
	REFERENCES.....	80
	APPENDIX.....	92

DEFINITIONS

Demographic data	Sex, age, professional category
Diffusion	Passive spread
Dissemination	Active and planned efforts to persuade target groups to adopt an innovation
EBP	Evidence-based practice, use of best available scientific evidence in clinical practice as a basis for decisions
Holistic	The whole system (phenomenon) is taken into account and not just parts thereof (holistic perspective)
Implementation	Active and planned efforts to mainstream an innovation within an organisation
Innovation	An idea, practice or object perceived as new by an individual or other adoptive unit
Primary care	Maintains and promotes health as well as combats and prevents ill health in the patient
Psychographic data	Values, knowledge, attitudes
R&D	Research & Development
R&D channels	Oral (research seminars and annual research days), Written (the news bulletin and popular science research reports) and Digital (Intranet and Internet web sites) communication channels
R&D information	Conveys what is happening in the world of R&D, e.g., news, courses and recent research findings

Role models	Individuals who by their behaviour or actions inspire others to imitate them
Self efficacy	An individual's belief in her/his own ability to achieve specific goals
Social media	Communication channels that allow users to communicate directly with each other by means of text, images or sound blogs, Internet fora, wikis, web sites for video clips, chat programs etc
Strategic communication	The purposeful use of communication by an organisation to fulfil its mission
SWOT	An analysis method used to evaluate the Strengths, Weaknesses, Opportunities and Threats inherent in a project

1 INTRODUCTION

There is a gap between theoretical knowledge and health care practice, which constitutes an obstacle to patients receiving optimal evidence-based care [1-4]. Studies from the United States and the Netherlands have revealed that 30 to 45% of patients do not receive care based on scientific evidence [5-7]. Despite the ongoing development of methods for implementing research findings in health care, the actual implementation process has been slow [8-12]. It is therefore a challenge to find new strategies and identify obstacles as well as possibilities in order to contribute to a positive attitude to research and a new way of thinking. One strategy is to work towards increasing staff members' willingness to assimilate new research evidence. This involves the creation of a scientific mindset as well as an intention to change throughout the organisation before the implementation of evidence-based practice (EBP), which is a difficult process to manage [13-14]. Apart from its scientific basis (evidence) and professional management, EBP also requires a positive research culture within the context in which it is to be implemented. Although it has been demonstrated that a positive shift in attitudes and willingness to change among general practitioners and nurses has a beneficial effect on EBP implementation [15], this culture does not appear to be widespread among Swedish health care personnel, the main obstacle probably being prevailing structural and cultural conditions. Primary care with its newly established research culture is no exception [16]. In 1996, the Swedish National Audit Office conducted an efficiency audit in universities [17], The Research Council and the Swedish Council for Planning and Coordination of Research, focusing on the way in which they organised and managed the task of disseminating research results outside the research community. It was found that, with a few exceptions, there were no action plans, strategies or administrative routines for the systematic dissemination of research results to the surrounding world as well as a lack of mediation and acceptance processes concerning research findings at different care levels.

In today's information society, patients have become more questioning and critical, obliging health professionals to change and adapt to EBP. As primary care culture is more firmly rooted and less inclined to engage in research compared to specialist care [18], there is greater difficulty meeting this requirement. Thus, a primary care culture characterised by an interest in research promotes new thinking and readiness to change, which facilitates the implementation of new research findings in the organisation [19].

One of several means to achieve this goal is the use of strategic communication to create knowledge of and interest in research and development as a step towards generating new ways of thinking and willingness to change. No such efforts have previously been made within primary care in Sweden. A willingness to change in the organisation can create a platform for further implementation of research findings in care practice, for the benefit of the patient.

2 BACKGROUND

2.1 R&D in primary care

A strong primary care organisation is a prerequisite for efficient health care [20]. In order to ensure that primary care has an evidence-based culture, an integrated research culture within the context in question is required [21-22]. The challenge to create a fully-fledged research culture within health care involves developing a strong infrastructure and strengthening the academic influence on the organisation [23]. It is also important to implement new research findings and focus on areas of clinical relevance. Historically, primary care research has not been prioritised and consequently interest in and enthusiasm about this field have been limited [24-25]. Although the lack of interest in research has been discussed in various contexts, no thorough evaluations have been carried out. Furthermore, low research interest in primary care has been linked to two important factors; lack of a supportive infrastructure and lack of a facilitating research culture [26]. However, in recent times research interest and involvement have been steadily rising. Studies reporting on the number of scientific articles published from 1975 to 2003 reveal a linear increase in the primary care field [16]. Moreover, more research in primary care has been recommended [27-28] and research funds have provided financial means that have contributed to the promotion of research in primary care, which over time will facilitate an opening up of the context to new thinking and a scientific approach. Health care system taxonomies are often associated with the funding mechanism that divides countries according to tax-based and social insurance systems. Although the funding method has a major influence on the system, it cannot completely explain the difference in health care delivery, which is why we considered the political context dimension.

In Europe

In Europe, primary care has developed continuously over recent decades. Despite the different forms and structures of this process, the underlying fundamental goals are identical; to maintain and promote patient health and to combat and prevent ill health. From an organisational perspective, there is an overlap between primary care and general practitioners in some countries [29]. A research tradition has been developed and structured in parallel with care production, whereby patient-centred research has received priority and slowly but steadily become established in everyday care [16]. However, there are significant differences in relation to R&D volume and delivery among

European countries. For example, in England and Wales health care is managed by the National Health Service (NHS), under the auspices of the Ministry of Health and Social Affairs. The NHS was established after the Second World War when all health care became the direct responsibility of the Department of Health and Social Security (DHSS), headed by a government minister [30]. A wide range of action programmes have highlighted the important role of primary care in evidence based care and research. In England, the development of a research network has been ongoing since the 1960s and recently acquired political legitimacy as a result of official acknowledgement of the value and potential of primary care research. In 1997, the national working group for primary care research and development in England recommended investment to establish a health care research network aimed at "creating an evidence based culture in primary care" [31]. In the Irish health care system, the importance of primary care as a key factor in health care and evidence based care has been stressed. In 2001, The Department of Health and Children clarified the role of primary care in the future development of the modern health services in Ireland [32]. Over a ten-year period, this policy contributed to the development of a multidisciplinary approach in primary care as well as an evidence based one in various primary care projects. The Netherlands is another European country in which primary care includes a systematically integrated research system [33], and where the importance of primary care research in close collaboration with the universities has been in focus at national level [34]. This policy has led to collaboration between academia and family practice, bringing them closer together and resulting in a satisfactory health care outcome [35]. The World Organization of Family Doctors (WONCA) is an international organisation of general practitioners corresponding to the Swedish Association for General Medicine (SFAM). WONCA-Europe has three permanent working groups, all of which are represented on its board. The European General Practice Research Network (EGPRN), a network for general medicine researchers, is one of these sub-groups [36]. The council assembly of WONCA Europe makes important decisions at an annual meeting.

In Sweden

The Swedish population has access to state funded health and medical care comprising national, regional and local levels. The regional level, where care is provided by the County Councils, constitutes the basis for tax funded health care [37]. The main area of responsibility in primary care includes overall care as well as treatment and health problems that do not require specialist treatment. In recent years, market oriented, demand driven health and medical care have been tested, where patients are free to choose between

private and public health care providers. “Choice of care in primary care” was first introduced in Region Halland in 2007 [38] and in all other county councils since 2010. In Sweden, family medicine and nursing science are relatively young disciplines and thus do not have the same R&D tradition as other medical disciplines [39].

R&D in primary care was first focused on in 1968/69 at a care centre in Dalby municipality in the south of Sweden [40]. Hospital administrators became increasingly aware of the importance of research for the quality and efficiency of health care. Family medicine became an academic discipline in the 1980s with departments and professorships at the universities. In a proposed amendment to the Swedish Health and Medical Act in 1996, the Swedish Government recommended that the scientific competence within the county councils should be enhanced by the creation of Research and Development units [41], resulting in the formation of a number of R&D units in the health service. This meant that research would be conducted outside the university hospitals, thus playing an important role in stimulating the research culture within health care as well as facilitating greater readiness to change in terms of assimilating new knowledge. These units differ from each other, both in terms of organisational composition and work practices, which mirrors the needs of the individual practices and forms the basis on which they are organised [42]. In 1995, the number of employees with an average-length nursing education who had obtained a doctorate was 200 [39].

The county of Halland

The county of Halland is situated in south-western Sweden¹. At the start of this study, the county had approximately 280 000 inhabitants. The organisation in the county with responsibility for the health of the population was divided into primary and county council care. In 1997, Halland County Council developed an R&D policy in line with the new legislation, whereby an R&D unit for primary care was formed, which included district nurses, children’s health care, physiotherapy, occupational therapy, dental care, dental health service and out-patient psychiatry. The R&D primary care unit in Halland opened in autumn 1997 with focus on family medicine and public health science. The goal was to raise the scientific competence of all primary care staff in Halland.

Before 1997, there were no research innovators in Halland primary care; only one general practitioner had obtained a doctorate and had links to academia compared to 52 at the County hospital [39]. It was not until the early 1990s

¹ In 2011 the county and its council became an autonomous region, called Region Halland

that a specialist examination for general practitioners was introduced in Sweden, which included the accomplishment of a scientific study. However, this examination was not mandatory and only a few general practitioners in Halland passed it. One possible explanation for the lack of a research tradition in primary care could be that Halland had no university hospital or any local research courses. At that time, quality assurance was on the agenda.

2.2 Organisational readiness for implementation

In several countries, the ambition to influence health care practice by implementing guidelines intensified in the early 1990s [43]. Since then, there has been a trend towards centralisation in the formulation of implementation guidelines and strategies. Accordingly, the systematisation of knowledge pertaining to the implementation of health care guidelines has become a major research area in the past two decades [44]. The growth of systematic management based on global development led to the establishment of the Swedish Council on Technology Assessment in Health Care (SBU) [43]. Besides the management of knowledge, methods are required for its utilisation and dissemination. The literature contains a large number of terms from different disciplines for describing the process of implementing knowledge in practice; innovation diffusion, knowledge utilisation, knowledge transfer and EBP [10, 45]. Despite the strong ambition to introduce and systematise implementation as an important part of health care, the practical phase from research results to optimal implementation usually takes a long time [12]. In fact, some estimates indicate that two-thirds of organisations' efforts to implement change are doomed to failure [46].

The improvement tools most commonly employed within health care, which is also the case in Sweden, are the knowledge-to-action framework (KTA), an action model that describes both knowledge creation and knowledge application (the action cycle) [10] and Plan-Do-Study-Act (PDSA) for planning-doing-studying and learning during the improvement process [47]. Another framework commonly applied by nurses is PARIHS [48-49]. This model is built on three elements; the level of evidence, the context in which the evidence is implemented and the method of facilitating change. A prerequisite is that members of the organisation exhibit readiness to change. Damschroder et al. described various organisational constructs that have an influence on implementation (Consolidated Framework for Implementation Research, CFIR) [50]. These constructs comprise five major domains;

intervention characteristics, outer setting, inner setting, characteristics of the individuals involved and the implementation process.

One vital aspect for assimilating new knowledge and for readiness to change is that the whole organisation, as opposed to only physicians and other academically educated groups, is characterised by preparedness. Several organisational factors impact on the outcome, such as the attitudes of staff members and management, managerial support, slack resources, adequate planning (clear goals and roles) and mechanisms for tracking and reporting progress [51]. In order for change to occur, there has to be interaction between these factors. According to Holt et al. (2010), an organisation filled with individuals who are energised psychologically about an impending innovation but who are ill-equipped to accomplish it is not better prepared than one whose members are apathetic but well-equipped [52].

As described above, the primary care organisation has undergone a number of changes in recent decades. It can be assumed that several factors of importance for readiness to change in addition to a positive organisational climate contribute to successful change in primary care [53]. In Halland County Council, where no obvious research tradition could be identified [39], it was difficult to establish organisations' readiness to change [39]. Some work places were more innovative and changes more easily introduced than in others. The members of these organisations played no part in the decision to introduce R&D into primary care, as it was the prerogative of management and politicians.

2.3 Strategic communication

The theoretical frameworks that underpin this thesis mainly originate from the strategic communication area.

2.3.1 The concept of strategic communication

The concept of communication is described as a joint activity between the actors involved, who are no longer called sender and receiver but participants, and contact is circular or spiral shaped. According to this view, communication becomes “a process where the participants together shape and share information in order to reach mutual understanding” [54]. While communication means the process of mutual influence between people, information implies the content of this process, thereby constituting that which is shared in the communication process [55]. Strategic communication is generally defined as “the purposeful use of communication by an

organisation to fulfill its mission” [56]. Communication is rendered more effective in combination with technical, administrative and financial instruments of control, thus facilitating the achievement of specific operational targets [55].

Since the 1990s, the area of strategic communication has significantly expanded both nationally and internationally. The concept can be found in a range of research traditions, e.g. corporate communication, communication management, integrated communication, organisational communication, public relations, planned communication and market communication [57]. Common to these traditions is that they encompass both internal and external organisational communication.

Strategic communication was not acknowledged as a field of research in its own right by scientific conferences and journals until the 21st century. The field is interdisciplinary with application areas in media and communication science, as well as business management, sociology, pedagogic, psychology and political science, and builds on several theories in these fields.

2.3.2 The information process

The organisation fulfils its mission by means of the operational goals, where the members’ behaviour is influenced, changed or maintained [58]. One step towards changing the behaviour of the members is to formulate communication goals consisting of what the target groups should take an interest in, what they should know, think and consider in order for the behavioural targets to be achieved [58]. According to *Information process theory* [59], the sub-goals are to create attention and interest, influence attitudes and intentions as well as promote or prevent decisions leading to action. This theory emphasises the different steps in a communication process from intention to act to actual behavioural change. The process is influenced by knowledge, interest and attitudes. However, these are often not enough to achieve change. The individual’s self-efficacy must also be strengthened, as lack of it can constitute an obstacle to a change in behaviour and intention to act. Self-efficacy is an individual’s perception of her/his thoughts and stances and a central concept in *Social learning theory* [60].

2.3.3 Organisational culture

The degree of self-efficacy among the members of an organisation is influenced by the attitude of management, which in turn affects the organisational culture [61].

The concept of organisational culture has a long tradition [62]. Despite the fact that the concept is vague and no universal definition exists [63], it is possible to discern certain characteristic frames and principles. Organisational culture consists of a pattern of common values and convictions that provides the individual with behavioural norms for facilitating an understanding of the functions of an organisation [62]. Bang (1999) described the expressions of culture in four different ways: *Behavioural expressions*: actions, behaviours, expressed feelings. *Verbal expressions*: stories, myths and legends, expressed values, norms and perceptions. *Material expressions*: objects and artifacts, physical structure and architecture. *Structural expressions*: rituals, procedures and ceremonies, recruiting, rewards and career systems. The expressions have common characteristics that are implicit, influence actions, are transferred and learnt in a group and often taken for granted [64].

Schein (2004) described culture using the metaphor of an iceberg. The first *visible level* above the surface is regarded by the members of the organisation as ‘artifacts’ i.e. that which is visible on the surface can have a different meaning in reality in terms of hierarchy and policy. Below the surface is the *semi visible level* of ‘Espoused beliefs and values’. The third level, described as ‘Underlying assumption’ or the *invisible level* is at the bottom and reflects that which can only be observed in the form of taken-for-granted attitudes, norms and values that are integrated into the organisational culture. These levels symbolise different layers of the hierarchical culture within healthcare.

Despite differences in the definitions of organisational culture, there is a common denominator, namely that it influences all members [62]. Despite the emphasis on cultural cohesion and stability in an organisation as the fundamental principle for the survival of the context, change over time is necessary [65].

Other determinants of organisational culture are the attitude of management and the demographic composition of the members, which, together with the organisational structure play a major role [66]. The hierarchical structure of the physical (members) and logical (functions) dimensions forms the basic prerequisite for the members’ further development. This fundamental principle pertains to almost all organisations, and health and medical care is no exception [67]. Within health care, the organisational culture is a product of its history and influenced by both external and internal factors [68]. This culture is similar to that of most other organisations, being constituted by various sub-cultures such as those of doctors, nurses, administrators etc.,

which in turn interact with each other [69] and at the same time contribute to the creation of innovative ideas and thoughts.

2.3.4 Organisational structure

Interaction between culture and structure is a prerequisite for an organisation to perform effectively. Unlike culture where changes are difficult to implement and time-consuming, structure lends itself to more rapid change [70-71].

The concept of structure describes the form of the organisation and emanates from communication processes. Structure is often illustrated by means of an organisation chart. Hierarchy is a visible structure in health care as well as in academia that is determined by education and examinations. Thus, hierarchical structure can be described as a system of high-level and subordinated positions, where power is at the top [72]. Although the role of the doctor as leader has been complemented by other professional categories, for example nurses, research and innovation are still more or less considered resources allocated to those highest in the hierarchy, i.e. doctors. These norms and values contribute to the formation of sub-cultures [62], in turn leading to professional socialisation, whereby members acquire knowledge, skills and attitudes characteristic of the profession [73]. Thus the acquisition of professional knowledge is regarded as a process where stances linked to the profession are gradually internalised and a professional identity is developed, a process considered necessary in order to develop the professional role [74]. This description can be applied to today's health and medical care, with its hierarchical and at the same time traditional culture [75].

Seen in a global perspective, organisations have moved from a totally bureaucratic towards a more post bureaucratic organisation characterised as flexible, non-hierarchical and built on shared values, dialogue and beliefs rather than adherence to rules [76]. The leader thereby acquired a new role of facilitator and partner who should encourage the members to become independent and autonomous. This change has led to increasing demands on the members to assume responsibility. They should also be socially competent, service-minded, have a positive attitude to change and ready to assimilate new values in line with the organisation's values [77-80]. For their part, the members expect professional leadership that can support and inspire them. They want to influence their own work and develop their competence [81]. In this respect, communication plays an important role, where one-way communication from the leader to the member has been replaced by dialogue,

including that between the members, about how to share learning, innovation and information in a meaningful way [77]. In recent years, health care, in particular primary care, has started this process to varying degrees. The reasons for the intention to change can be explained as a function of the present situation as well as exposure to increasing competition.

2.3.5 Diffusion of innovation

Social learning theory describes influence processes from an individual perspective, while Diffusion of Innovation theory focuses on the collective perspective.

One solution to the problem of low self-efficacy and an organisational culture that is not ready to change may be the application of diffusion theories such as *Diffusion of innovations* [82] and *Social learning theory* [83]. In the former, new developments and innovations are communicated to opinion leaders who in the next step communicate them to the other members of the social groups. *Diffusion of innovation theory* [82] explains how new ideas and findings are communicated over time through different channels and among members of various social contexts during the influence process. A key concept of the theory is the process whereby a group adopts an innovation and develops it over time, Figure 1.

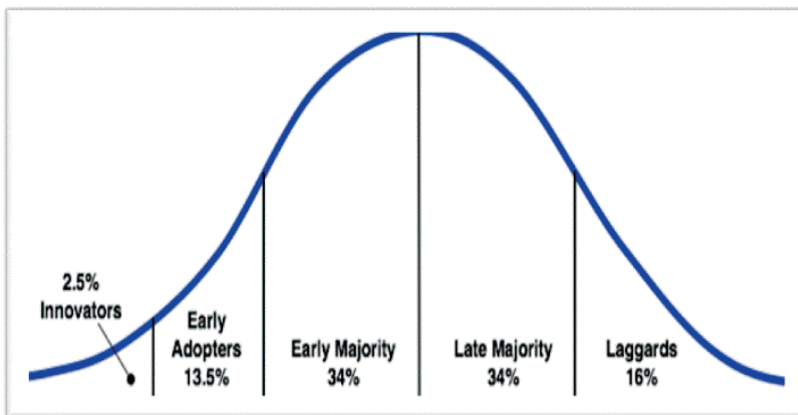


Figure 1. Roger's distribution of individuals in a social context after adoption of an innovation [82].

The change follows the principle of an approximate Gaussian curve distribution of innovators who first adopt the innovation and advocate change irrespective of time and spatial restrictions. In the next phase of the

development process, *Early adopters* play a key role as opinion leaders in relation to the rest of the members, of whom the *Early majority* are those who adopt the change before the average member. The *Late majority* are positioned on the other half of the symmetric curve and comprise those who are sceptical about the innovation but still allow themselves to be influenced by the Early majority. The final position is that of *Laggards*, who either adopt the change at a late stage or not at all [82].

One application of the Diffusion of innovation theory employs a network of information disseminators based in the ordinary activities who function as Early adopters. There is an ongoing discussion about the importance of researcher networks within knowledge sociology and organisational theory about the importance of researcher networks [84] as well as within healthcare, where knowledge is communicated and exchanged between networks [8, 84-85].

Such a model is realised in a more productive way if all professional categories are involved in the network and contribute to a positive and sustainable attitude to change on the basis of commitment and participation. Individuals in the network can also play an active role in influencing the development in a positive direction by being both opinion makers and role models in the cognitive process [82-83]. The members learn, among other things, by observing and imitating the behaviours of others, which Bandura described in *Social learning theory* (1977). What distinguishes role models from opinion makers is that the former are not expected to persuade people around them to change their behaviour but merely have to do things correctly and continue to do so [58]. When people, for example colleagues, become role models and demonstrate that a change in behaviour is possible, it is in many cases as effective as a series of verbal campaigns.

The strategic communication employed in this thesis was influenced by the above theories.

3 AIM

The overall aim of this thesis was to describe, follow up and evaluate the implementation of R&D among primary care staff by means of strategic communication.

Specific aims

- I. to determine the utilisation of knowledge of and interest in research and development among primary care staff by means of a strategic communication process
- II. to analyse primary care staff members' readiness to adopt new ways of thinking and willingness to change their work practices by means of strategically implemented communication (short- term perspective)
- III. to understand how organisational culture influences the intentions of primary care staff members to engage in research and development
- IV. to evaluate the utilisation of strategic communication as an indication of willingness to change work practices among primary care staff (long-term perspective)

4 METHODS

The thesis comprises four studies (papers), an overview of which can be found below (Table 1).

Table 1. *Methodological flow of the thesis.*

Study	I	II	III	IV
Design	Follow-up principle	Follow-up principle	Descriptive and observational	Longitudinal follow-up and evaluative
Study population	n=890	n=890	n=30	n=352
Data collection	Questionnaire	Questionnaire	Observations, interviews, documents	Questionnaire
Data analysis	Bivariate, multivariate and qualitative content analysis	Bivariate and multivariate	Ethnographic approach	Bivariate and multivariate, SPLine*

*SPLine: based on Smooth Polynomial function

4.1 Study design

The thesis has a prospective, follow-up design. The objective of the four studies was to describe, analyse and evaluate the implementation of R&D in primary care by means of strategic communication, Figure 2.

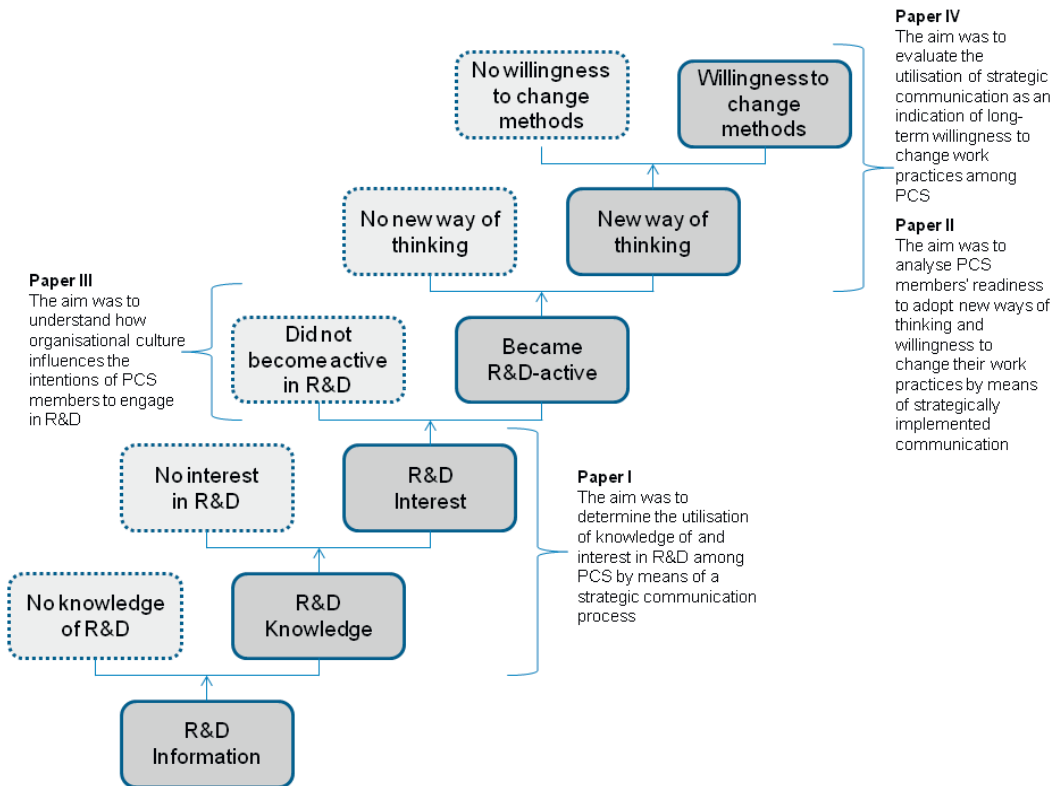


Figure 2. The communication process from R&D information to willingness to change work practices as well as the aims of the four papers.

4.2 Study context

Before the launch of the R&D unit in 1997, an inventory was conducted in order to obtain an overall impression of staff members' intention to engage in research and development [39]. The results indicated a low level of R&D activity among staff, highlighting the issue of systematic resource allocation within the activities. An R&D unit was established and a communication plan including an activity programme formulated. An analysis of the surrounding environment based on SWOT was performed. Furthermore, a target group analysis and a description of the organisational culture were made and documented. An activity cohort was initiated using strategic communication as a platform for the intervention.

4.2.1 SWOT analysis of the surrounding environment

A SWOT analysis² of the surrounding environment was performed to identify possible Strengths, Weaknesses, existing Opportunities and potential Threats related to the selected primary care organisation.

SWOT

Strengths

- Political involvement in the form of R&D policy decisions
- The creation of an R&D unit to cater for primary care needs
- Interdisciplinary competence at the R&D unit capable of providing service to different staff categories
- Positive leadership

Weaknesses

- Lack of a research tradition
- Practical experience rather than theoretical platform
- Lack of resources for members interested in research
- Limited knowledge among staff members of the benefits that research can bring to care
- High average age of staff members
- Lack of a plan for higher professional status based on research merits

² The SWOT analysis was developed by Albert S. Humphrey in the course of his work at the Stanford Research Institute between 1960 and 1970.

Opportunities

- Primary care becomes a more competent scientific activity
- The organisation becomes competitive in terms of recruitment
- The integration of R&D in the activities improves the quality of care
- Staff members acquire increased knowledge, which enhances their personal development

Threats

- Politicians and management want immediate results
- Politicians and management give priority to other practical activities in financially strained situations at the expense of R&D
- Organisational factors restrict development.
- Managers feel threatened by scientifically competent staff members
- The culture is too strong to allow organisational routines to be changed in the short term

Box 1. Surrounding environment based on SWOT analysis before the intervention in the study context.

4.2.2 Target group analysis

Primary care staff

Demographics

The gender distribution within the primary care unit was uneven, as approximately 90% of staff members were women. The average age was 48 years (24-74) and the majority belonged to the 46-55 year age group. Nurses/district nurses/midwives (nurse group) constituted the largest professional category, followed by that of physician/psychologists³.

Psychographics

No effort had been made to market the concept of R&D to Halland County Council staff prior to the start of R&D unit activities in 1997. Certain groups had some contact with R&D; for example the Swedish Medical Association's journal and congress gave physician an opportunity to familiarise themselves

³ Official statistics; County Council of Halland, Sweden 2004.

with scientific developments. Other groups were those that recently underwent education, e.g. district nurses and physiotherapists, as such education involves scientific work.

Primary care management

Demographics

There were 110 managers in primary care in Halland, of whom 27% were male and 73% female.

Psychographics

R&D policy was drawn up by County Council management and was thus politically anchored. The unit managers did not possess more R&D familiarity or knowledge than their staff members. Primary care managers are not required to have R&D competence for their job.

4.2.3 Analysis of organisational culture

The structure and culture were found to be hierarchical and pyramid-shaped, which extended far back in time. Managers at various levels carried out top-down political directives.

4.3 The 12 year intervention

Strategic communication was utilised as a platform in the intervention process, which consisted of three phases aimed at sequentially creating, anchoring and maintaining or improving staff members' intention to engage in R&D over time. The staff members' intention to engage in R&D was measured on two occasions, seven (short term) and twelve years (long term) after the start of the strategic communication process. The timing of the first measurement was based on an empirically expected effect where a scientifically critical mass was assumed to have been created as a possible consequence of a strategic communication process. The next measurement took place after an additional 5 years, when staff members were expected to have assimilated new thinking and readiness to change everyday work practices. The long-term evaluation was designed as a longitudinal study due to the wish to assess, as far as possible, the positive effect of exposure to communication on staff members who had experienced it continuously for at least 5 years. Two fundamental measures to strengthen the study design were undertaken between 2004 and 2009:

- An ethnographic study of a care centre was carried out in order to gain a deeper understanding of the role of organisational culture in staff members' intention to engage in R&D.
- A network consisting of Early adopters (R&D ambassadors) was introduced, the aim being to facilitate and speed up a change in attitude among their colleagues in two steps.

4.3.1 The communication strategy

1997–2004 intervention

Part of the communication strategy was that information should be user-friendly, tailored to the target group and accessible to all professional categories in primary care [2, 82, 86]. Staff members could obtain information about the new R&D activities by using the various communication channels, which not only complemented each other but also provided a synergy effect. The communication plan was implemented via the three established communication channels; oral (research seminars and annual research days), written (the R&D news bulletin and popular science research reports) and digital (Intranet and Internet web sites). The content of these channels was based on a communication platform [55]. The choice of dialogue forum followed the principle of continually contributing to the enhancement of staff member self-efficacy, in order to gradually increase motivation to assimilate and integrate research evidence in the context of care [60]. The content of the seminars was carefully selected and tailored to the target group. The choice of a popular science instead of a pure science approach was another pedagogical strategy aimed at encouraging as many professional categories as possible to assimilate the content. The objective of the R&D news bulletin was to disseminate research developments and scientific results by tailoring the message to various professional categories with different educational backgrounds. The R&D news bulletin, which was issued four times per year, also had a strategic dissemination strategy, which involved sending a number of copies to each unit's coffee room to be available to all staff members, while politicians, senior managers and those involved in R&D received their own copy. The other channels had similar strategic communication principles. The digital channel complemented the oral and written ones. Great importance was placed on all three channels covering primary care staff members' need for information on research and development in the organisation. Interaction between the channels was

expected to lead to a synergy effect that would promote the aim of the study. The results are presented in Papers I and II.

2005–2007 intervention

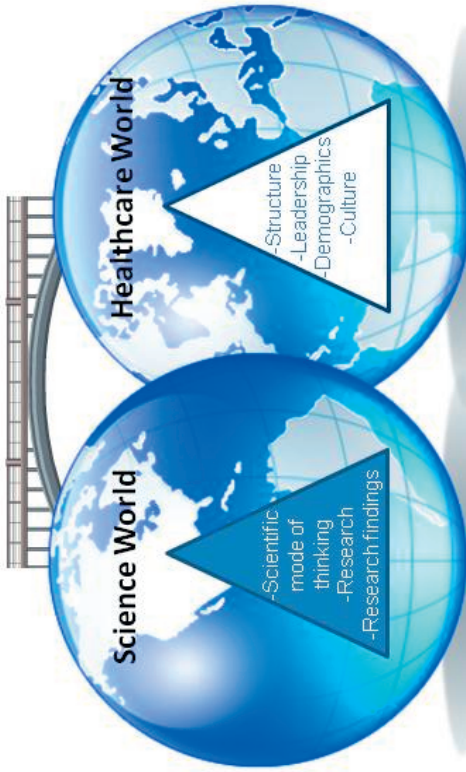
After the first measurement, it was deemed necessary to strengthen the intention to engage in R&D at unit level. In addition, several obstacles to staff members' interest and further participation in R&D were revealed, which required planning prior to the implementation of new communication strategies. The organisational culture was found to be an important factor. As it is an essential part of the organisation, culture forms and is formed by communication [67]. Adapting communication to the way in which the organisational culture is perceived is vital for a successful communication strategy. Thus it was considered essential and a natural part of the process to conduct a deeper study of the role played by the primary care organisational culture in terms of influencing staff members' willingness to adopt change. The result is presented in Paper III.

2007–2009 intervention

The short timeframe of the first three interventions highlighted the need for an overarching strategy to gradually close the gap between the theory and practice of the two different worlds (evidence-to-practice-gap). The media strategy was both long term (organic growth) and short term ('carpet bombing'). Organic growth implies a chain reaction, which means that a small number of opinion leaders and role models influence others in their social context, while 'carpet bombing' refers to short-term high intensity activities, for example, in the context of an event such as annual research days, aimed at promoting change [58]. The strategic communication was therefore complemented by a network that should function as a key component of the implementation process [85, 87]. Those exhibiting the greatest interest (early adopters) and who had a basic knowledge of scientific theory and method (no less than 15 credits) were invited to participate in the network (R&D-ambassadors). Unlike the other communication channels, the network strategy involved direct impact through personal contact [82] aimed at a dissemination effect over time, first within the network and subsequently among the rest of the staff. These R&D ambassadors promoted and ensured a positive attitude prior to the process aimed at creating an intention to engage in R&D in the long term. They also acted as the builders of a culture of new thinking before the actual process started but also as scientific role models for the members of their own unit. The network of R&D ambassadors made it possible to achieve a dual effect; 1) the ambassadors had knowledge of the context and could market, communicate and translate EBP to their own unit and 2) due to their knowledge of the need within their own organisation, they

could help to identify the most appropriate EBP for implementation [48]. A prerequisite for a successful network of ambassadors is that they gain something in return. In the present study, these ambassadors became part of a social network where they obtained research information through a digital news bulletin, meetings and further education together with like-minded people [88]. The purpose was to create a distinctive image of the network in the short term in order to subsequently build a platform for future intervention with a view to accelerating innovative thinking among staff members [89-93]. The strategic communication process described above was intended to reduce the theory-practice gap, thus integrating the world of research with that of health care, see Figure 3.

Implementation of research and development in primary care by means of strategic communication



Strategic communication

Theoretical platform	Hypothesis	Communication plan	Intervention via communication channels adapted to the target group	Evaluation of R&D implementation in primary care
<ul style="list-style-type: none"> Information processing theory Individual level: attention, interest, knowledge, attitude, intention handling (McCune) Social learning theory Individual level: self-efficacy, role models (Bandura) Diffusion of innovation theory Collective level: networks, adoption (Rogers) Organisational culture Collective level (Schein) 	<p>Dissemination of information creates knowledge leading to interest that in turn elicits new thinking and willingness to change</p>	<ul style="list-style-type: none"> Analysis of the surrounding world, target group and organisational culture Choice of message and media strategies Implementation plan Evaluation plan 	<ul style="list-style-type: none"> Oral: R&D seminars, R&D days and reports Written: R&D news bulletin and reports Digital: internal/external web sites Direct (own initiative) and indirect (information from others channels) 	

Figure 3. The communication process and its components employed in the implementation of R&D.

4.4 Study population

4.4.1 Staff cohort

A staff cohort comprising all primary care staff members was formed at the start of the R&D activities in 1997 (N=1,276).

4.5 Papers I, II and IV

4.5.1 Instrument

First measurement 2004

A questionnaire consisting of 43 items (Appendix) was constructed on the basis of a literature review and the experience of the research team. The team comprised a primary care communication strategist (main author), a general practitioner (primary care physician), an expert in strategic communication, a health care expert (nurse) and a biostatistician (public health), all of whom worked together in developing and scrutinising it. The following items were included in the studies (Box 2).

Items	
<i>Background variables</i>	Age (<i>continuous</i>) Sex and leadership (<i>dichotomous</i>) Profession (<i>category</i>)
<i>Role of the Strategic communication</i>	Knowledge of R&D activity (<i>dichotomous</i>) Interest in R&D (<i>dichotomous</i>) Creation of innovation (new ideas), (<i>dichotomous</i>) Willingness to change work practices (<i>dichotomous</i>)
<i>Utilisation of the Communication channels</i>	
Oral	Visited the R&D seminars (<i>dichotomous</i>) Visited the annual research days (<i>categorical with ordinal scale</i>)
Written	Have seen the R&D news bulletin (<i>categorical with ordinal scale</i>) Have read a copy of the R&D news bulletin (<i>categorical with ordinal scale</i>)
Digital	How often do you visit LINA, the R&D department's intranet web site (<i>categorical with ordinal scale</i>) How often did you visit the R&D department's Internet web site? (<i>categorical with ordinal scale</i>)

<i>Impact of the Communication channels</i>	
Oral	Have the R&D seminars influenced your interest in finding out more about R&D? (<i>dichotomous</i>) Have the annual research days influenced your interest in finding out more about R&D? (<i>dichotomous</i>)
Written	Has the R&D news bulletin influenced your interest in finding out more about R&D? (<i>dichotomous</i>)
Digital	Has your visit to the R&D intranet web sites influenced your interest in finding out more about R&D? (<i>dichotomous</i>) Has your visit to the R&D Internet web sites influenced your interest in finding out more about R&D? (<i>dichotomous</i>)
<i>Direct and indirect communication channels</i>	Became interested in R&D through my own initiative with regard to the R&D channels (6 <i>dichotomous</i> items) Became interested in R&D through a person who had been exposed to the R&D communication (7 <i>dichotomous</i> items).

Box 2. *Character of the items included in the thesis.*

These items were complemented by an open question “What is the reason for the lack of interest in research and development?”, which allowed the participants to describe, in their own words, the barriers to gaining knowledge of and interest in research and development in primary care (Paper I). The questionnaire was employed in Papers I and II.

Second measurement 2009

For the second measurement, the questionnaire contained, in addition to the questions in the previous questionnaire, the following items (Box 3).

Items	
<i>Large-scale organisational changes</i>	The influence of organisational changes on staff members' new way of thinking (<i>dichotomous</i>)
<i>Creating a distinctive image for the R&D Ambassadors</i>	The influence of: Knowledge of R&D ambassadors among staff members (<i>category</i>) Contact with the R&D ambassadors (<i>dichotomous</i>)

Box 3. *Supplementary questions in the second measurement.*

Face and content validity

A pilot study was carried out in two steps. In the first, employees and contract employees (n=20) read through the questions, reflected and were invited to provide suggestions for improvement. The reflections were based on exploration of the interpretation of the questions, the relevance of the response alternatives and complemented by assessment of the readability and comprehensibility of words and sentences. This process took place during the first stage of the pilot study. The second step was initiated after the questionnaire had been amended and involved a strategic selection covering an even geographical distribution of the primary care areas in the county (n=50). Thereafter, the staff members filled in the questionnaire and reflected on it in a similar way.

Construct validity

In order to obtain pure factors, the construct validity of the questions on the utilisation and impact of the communication channels was measured using explorative factor analysis [94-96] with Varimax rotation. Factorability of the correlation was assessed using Bartlett's test of sphericity with $p < 0.05$ and Kaiser-Meyer-Olkin's measure of sampling adequacy of ≥ 0.60 [97]. Factor loadings of ≥ 0.50 were considered meaningful [98]. Eigenvalues of > 1 were taken into account [94, 97].

Internal consistency reliability

The Cronbach's alpha coefficient was calculated to determine the overall homogeneity of the factors. Cronbach's alpha values of > 0.70 are recommended [99]. When a new questionnaire is used, empirically acceptable values greater than 0.60 are required. Validation of the questionnaire (factor analysis) and reliability testing (Cronbach's alpha) were conducted separately for both measures in 2004 and 2009.

4.5.2 Power calculation

The size of the sample was chosen based on the anticipated effect of communication on the creation of knowledge of and interest in R&D over a five year period. No studies with a similar focus using strategic communication as an intervention instrument were available for comparison purposes. As a result, the decision about the size of the sample was based on the research team members' empirical assumption that the overall influence of communication on changes in attitude over time would be approximately 40%. Due to an expected hypothetical effect of at least 30% (beta error=0.20; Power=0.80) and a significance level of 0.05, approximately 172 individuals were required in the study cohort in order to demonstrate a probable statistically significant improvement on the first measurement occasion.

Following further discussion on the possible need for sub-group analyses, it was decided to conduct a study of the total population involving all primary care employees (N=1,276).

4.5.3 Data collection

The questionnaire was posted together with a cover letter and a prepaid response envelope. A reminder was sent after two weeks to those who had not replied. After a further two weeks, the questionnaire and cover letter were posted once again to those who had still failed to reply. For Papers I and II, the total response rate was 846, i.e. 70% of the whole population. Paper IV included all staff employed in Primary Care Halland for a minimum of five years between 2004 and 2009 who had been exposed to continuous R&D communication. Furthermore, 80% of the study population had been employed for over 12 years. These individuals formed the basis of the longitudinal comparison (n=352).

The individuals were classified based on the Swedish Socioeconomic Index (SEI) [100]. The professional categories were aligned with the SEI using the National Socio-economic Dictionary [100]. The SEI groups were divided according to a ranking principle that took account of the social status of a profession with emphasis on educational level, resulting in four sub-groups: I: assistant nurse; II: dental nurse (assistant), medical secretary, administrative staff; III: nurse, district nurse, midwife, dental hygienist, physiotherapist, occupational therapist; IV: physician, dentist, psychologist. This sequential ranking order was expected to have an impact on the attitude to new thinking and willingness to change. The four SEI groups were approximately evenly distributed across the participating primary care units. This SEI classification was employed during the evaluation of strategic communication over time.

4.5.4 Data analysis

Statistical methods (Papers I, II and IV)

Factor analysis was used in papers I and II to identify construct validity and Cronbach's alpha for testing reliability [94-95, 97-98]. Spearman correlation was employed to establish whether the correlations obtained in the factor analysis were in agreement with a non-linear correlation [101]. Descriptive statistics in the form of frequencies mean and standard deviation (SD), median and inter-quartile range (IQR) as well as proportions (%) were employed to describe the background variables. The chi-square test was used to analyse variables of a dichotomous nature [102]. Student's t-test was

utilised when comparing two sub-groups with variables of approximately normal distribution [103]. Multivariate logistic regression with an odds ratio (OR) and a 95% confidence interval (CI) was performed to analyse the influence of the communication channels on attitudes in relation to background variables [104]. All tests were double-sided, and the level of significance was set at 0.05. The responses were processed using the SPSS statistical program [105].

In paper IV, in order to ensure continuity in addition to improvement over time, the methodological algorithm was based on an affirmative response (YES) to the questions in the 2004 and 2009 measurements. Factor analysis was used to identify construct validity and Cronbach's alpha to test reliability. The McNemar test was used for a comparison between dichotomous variables over time [102]. The paired t-test was employed to compare two normally distributed variables over time. Multivariate logistic regression with an odds ratio (OR) and a 95% confidence interval (CI) was performed to analyse the improvement brought about by communication (difference between the 2004 and 2009 measurements) on intention to engage in R&D in relation to the background variables [104]. The responses were processed using the SPSS statistical program [105].

A new variable was created by relating *years of practice* to the *influence on organisational change* variable. An additional multivariate regression analysis using SPLine [106] was included to estimate the probability of willingness to change work practices as a function of years of practice with regard to major organisational change. All tests were double-sided, and the level of significance was set at 0.05.

Qualitative content analysis (Paper I)

Qualitative content analysis is used when the purpose is to identify and categorise the content and meanings of a text with reference to the aim of the study [107]. The process should be operationalised without changing the content to correspond with the purpose of the study. This approach takes account of similarities and differences and at the same time ensures that the result will be comprehensible and close to the text. Qualitative content analysis is also used for short answers to open questions [107]. Analysis of the open question began by the main author reading the responses several times in order to become familiar with the material and gain a general impression of the whole. Parts of the responses related to the aim of the study were written into an analysis matrix containing meaning units. In the following step, the data were analysed by the co-authors. In order to establish the manifest content, the meaning units were condensed by abstracting, coding and

grouping them into categories that corresponded to the aim. The analysis was repeated on different levels to ensure that no data had been excluded or included in more than one category. Finally, a theme was formulated and the latent content of the texts described. In the qualitative content analysis, the latent content was used as a basis for interpreting the themes [107]. The advantage of this method is that it is suitable for different levels of text and capable of revealing similarities and differences in the material. The results can be deemed trustworthy because they are contextually close to the text and reproduce its meaning [107].

4.6 Paper III

The ethnographic method has been used for many years in both medical and sociological research [108]. Ethnography makes it possible for the researcher to integrate with the study object and more closely approach the meaning and interpretation of the phenomenon [109]. It constitutes a systematic method of observing, describing, documenting and analysing patterns, cultures and sub-cultures [110]. The traditional view of ethnographic studies is associated with spending a long time in the field, but in the modern school of ethnography, the time factor can be reduced depending on the way in which the field study develops [111]. The study had an inductive observational design with an ethnographic approach, which included a recurrent time mode, where the key criterion was field research [111]. The study was conducted by means of specific cyclic activities over time.

4.6.1 Observations, interviews and document analysis

The study consisted of observations, interviews and analysis of documents [110].

4.6.2 Data collection

The main author conducted four months of field studies and interviews in line with the recurrent time mode comprising *cyclic activities* (Figure 4). The cyclic activities took place every autumn and spring. A typical public sector care centre was selected, where the staff members had responded that they were interested but not active in R&D. A total of 36 persons worked at the centre, 30 of whom participated in the study. The rest were not on duty at the time of the study. The manager had been appointed a few years earlier. The care centre was one of several public sector organisation in the locality. The staff had worked together for a long time but had no private contact outside working hours. The care centre was managed hierarchically, and there were three managers above the unit manager.

As the main author had previously worked at the centre, it permitted quick socialisation into the context. Three field studies were conducted (a total of 24 hours of observation over three full days) complemented by informal conversations to verify the outcome of the observations and to develop the issues highlighted. During the observations, short field notes were made using pen and paper, which were transcribed and condensed immediately afterwards. In certain situations, for example coffee breaks with informal conversation, there was no need for notes, but these were made shortly after

the observation in question. When the field study period was over, two formal in-depth interviews were conducted with a unit manager and a staff member (one hour each). These interviews were semi-structured and the questions based on the analysis of the field studies. They were audio-taped and transcribed verbatim shortly afterwards. The care centre's steering documents, which took the form of an annual plan and report, were also collected for further analysis.

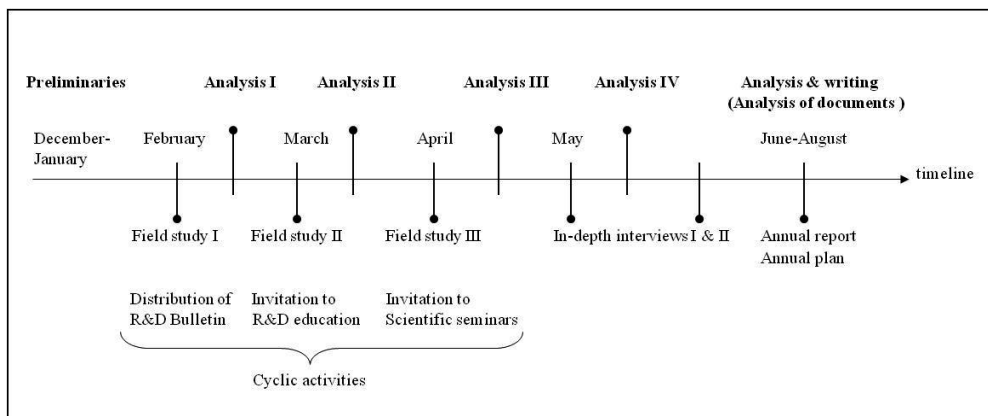


Figure 4. Timeline of the study process including cyclic activities.

4.6.3 Data analysis

In order to provide as rich a description of the content as possible, a clean copy of the handwritten notes on the observations and informal interviews was made and further elaborated [109]. The analysis began during the transcription and documentation in the field, where preliminary themes in statements and field notes were searched for characteristics in the form of routines, symbols and functions [109]. The aim of the analysis was to identify patterns in the way in which staff members acted in the area in question. The analysis process is illustrated in Figure 4. Notes were made in the margin about the various themes to which the statements belonged. Questions for the in-depth interviews were formulated on the basis of the preliminary themes. After transcription of the in-depth interviews, a systematic analysis of the whole material began, in which sections relevant to the aim were explored. Quotations were extracted from the text, coded with a number and grouped under the respective theme. A document analysis of the care centre's annual plan and report was also performed. A joint assessment with one of the co-

authors was carried out during the analysis to test the reliability (inter rater reliability) [112], after which the interdisciplinary research team was invited to comment on the analysis process and resulting themes. The data were analysed by identifying themes describing behaviours and attitudes exhibited by primary care staff, regarding their intention to engage in R&D.

Interpretation and reliability aspects

The field studies lasted four months, which can be considered too short a time for an ethnographic study. Jeffrey and Troman (2003) claimed that a limited observation time per se is not necessarily of crucial importance, as demarcation of the observation field and attention are directed towards the most important aspect, i.e. recurrent time mode. The number of observations is based on the aim and activities decided on by the researcher, who clearly specifies the object of study (in this case the intention to engage in R&D) and carries out continuous selection regarding these activities and the individuals recruited. The most important aspect of the present study was those R&D activities that featured on the news agenda several times during the months when opportunities to discuss the intention to engage in R&D were created.

The fact that the main author had previously worked at the care centre can lead to preunderstanding in the interpretation. It is important not to *go native*, i.e. identifying with the subjects in such a way that the ability to see what is actually happening is impaired [109]. However, the recurrent time mode reduces this risk, as distance is ensured by temporarily leaving the field for regular reflection [111]. On the other hand, *going native* can be a strength, as the main author was encountered in a natural way and could be quickly immersed in the context. The reliability of the study was strengthened by the fact that the main author played a central role in the implementation of all ethnographic components in the field. Unlike questionnaires or interviews, the ethnographic method made it possible to describe the invisible level of the organisational culture, which can only be observed by being part of the context [62]. By combining different approaches, i.e. observations, interviews and document analysis, it was possible to improve the quality of the study material and gain a better understanding of the phenomenon. Another positive factor was that the research team possessed interdisciplinary competence comprising communication, medical and nursing knowledge as well as extensive experience of applying qualitative methods in the context of health care. In general, it is impossible to conduct a purely objective ethnographic study, as such a study is governed by its context, current trends and the international, political and historical situation [113].

4.7 Ethical considerations

This thesis was guided by and conformed to the ethical research principles set out in the Declaration of Helsinki [114]. At the time the studies were planned and conducted, no ethical approval was required under Swedish law (studies I, II and III). Permission to carry out the ethnographic study (study III) was granted by the head of department. The quantitative part of the thesis with a longitudinal design (study IV) was approved by the Ethics Committee at Lund University, Sweden. All studies were reported to and approved by the person responsible for the Swedish Personal Data Act (PUL) in the primary care context where the studies were conducted. However, despite approval from an Ethical Review Board, the researcher must assume ethical responsibility [115] and, accordingly, the ethical considerations adhered to the four ethical principles of Autonomy, Beneficence, Non-Maleficence and Justice.

Autonomy

In all studies, the researcher paid due attention to the subjects' integrity, both psychological and emotional. In studies I, II and IV, all participants were invited to complete and return the questionnaire, informed that participation was voluntary and that the responses would be treated confidentially. A data register was established for the information contained in the questionnaires, excluding personal data. The material was rendered anonymous on conclusion of the study. The cover letter contained, among other things, a description of the study aim and the practical value for the scientific development of primary care staff. The participants could withdraw from the study at any time. Great care was placed on making the items in the questionnaire easy to understand in order to facilitate the participants to follow the operationalisation of the aim during the study process. Furthermore, all markers related to personal integrity were rendered anonymous and the individuals recoded, making them impossible to identify. The recoded observations could then be followed up longitudinally over time. By combining approval from The Ethical Review Board with the principles of confidentiality, the ethical responsibility towards the informants was increased [115]. In study III, the managers and participants were aware that the reason for the main author's presence was to investigate the staff members' interest in R&D, but were given no details about the aim of examining the role of organisational culture in influencing their intention to engage in R&D [109, 116]. Furthermore, all employees were informed that the result of the investigation would be part of research. They were assured that they could withdraw from the study at any time. However, none of the participants dropped out.

Beneficence

The aim of the intervention was to strengthen the intention among staff members to engage in R&D as a means of promoting new thinking and willingness to change. In addition, great importance was placed on promoting the participants' self-efficacy in order to better prepare them for the challenge of changing their attitude. The design and implementation of the intervention adhered to ethical guidelines in accordance with the stated aim.

Non-maleficence

The intervention adhered to the principle that no participant should suffer harm, be it physical, mental or social. The fact that the personal data from the questionnaires (studies I, II and IV) were rendered anonymous minimised the risk of breach of confidentiality. The main principle in the ethnographic study (study III) was not to consciously harm or expose any participant. This meant that, as far as possible, persons and locations were rendered anonymous [109].

Principle of justice

The intervention encompassed all staff members in the cohort, irrespective of their occupational status, professional or social affiliation [117-118]. The inclusion criteria for the care centre in study III were based on the results of Studies I and II. An additional factor of importance in the choice of that particular health centre was the fact that the main author had been employed there, which facilitated acclimatisation into the context.

5 RESULTS

5.1 Validity and reliability (Papers I, II and IV)

Use of the communication channels (exposure)

A three-factor solution based on six items yielded pure patterns on both occasions. The three factors in the factor analysis had a cumulative variance of 76.1% on the first and 77.5% on the second occasion. The Eigenvalue was >1.0. The correlation intervals within factors were 0.82–0.89 for the first occasion and 0.83–0.90 for the second. There was approximate agreement with the results of the Spearman correlations. The overall reliability on the two occasions was 0.61 and 0.62 (Table 2).

Table 2. Factor analysis of the role of the communication channels in exposure to R&D on the first and second measurement occasions.

	1st occasion				2nd occasion			
	Communalities	Factor loadings			Communalities	Factor loadings		
		Factor I	Factor II	Factor III		Factor I	Factor II	Factor III
Communication channels								
Exposure:								
<i>Oral</i>								
Scientific seminars	0.73	0.84	0.05	0.10	0.76	0.87	0.06	0.06
Annual research days	0.72	0.84	0.11	0.10	0.73	0.83	0.13	0.15
<i>Written:</i>								
Have seen the R&D bulletin	0.77	0.03	0.88	0.02	0.78	0.01	0.88	0.03
Have read the R&D bulletin	0.73	0.22	0.82	0.08	0.74	0.19	0.83	0.10
<i>Digital:</i>								
Intranet	0.81	0.10	0.09	0.89	0.82	0.12	0.08	0.89
Internet	0.81	0.10	0.01	0.89	0.83	0.09	0.01	0.90
Eigenvalues		2.10	1.33	1.13		2.13	1.42	1.10
Cumulative variance %		26.90	51.60	76.1		27.50	52.60	77.50
<i>Cronbach's alpha:</i>								
Occasion I=		0.61						
Occasion II=		0.62						

Principal component analysis with Varimax rotation was conducted. The overall Cronbach's alpha coefficient was used as a test of reliability.

Impact of the channels

The performance of a factor analysis based on five items produced one pure factor on both occasions. The cumulative variance was 61.3% on the first and 70.6% on the second occasion (Eigenvalues >1.0). The correlation intervals within factors were 0.74–0.84 and 0.70–0.90, respectively, on both occasions. The overall reliability was 0.84 on the first and 0.89 on the second occasion (Table 3).

Table 3. Factor analysis of the role of the communication channels in creating an interest among staff (effect) on the first and second occasions. The overall Cronbach's alpha coefficient was conducted as a test of reliability.

	1st occasion		2nd occasion	
	Communalities	Factor loading	Communalities	Factor loading
Communication channels				
Have become interested in R&D as a result of:				
<i>Oral</i>				
Scientific seminars	0.67	0.81	0.81	0.90
Annual research days	0.71	0.84	0.81	0.90
<i>Written:</i>				
Research bulletin	0.58	0.76	0.74	0.86
<i>Digital:</i>				
Intranet	0.56	0.75	0.67	0.82
Internet	0.55	0.74	0.50	0.70
Eigenvalues		3.07		3.53
Cumulative variance %		61.30		70.60
<i>Cronbach's alpha:</i>				
Occasion I=0.84				
Occasion II=0.89				

5.2 From knowledge to change (Papers I and II)

5.2.1 Staff cohort

The study cohort encompassed all primary care staff and the number of participants was 1,276. A total of 846 staff members returned the questionnaire (70%). The mean age of the respondents, of whom 89% were women, was 49.5 years (SD=8.8). The majority of participants (38.3%) belonged to the nursing category (Table 4).

Dropouts were those who failed to complete the questionnaire due to being temporarily absent on account of study, parental or sick leave (20%) and those who filled it in incorrectly (10%). The dropout rate thereby represented 30% of all primary care staff in Halland.

Table 4. Descriptive information about the primary care staff (n=846) related to demographic variables (Papers I and II).

	n	(%)	Mean (SD)	Median (IQR)
Sex	846	100.0		
Men	95	11.2		
Women	751	88.8		
Age	846	100.0	49.5 (8.8)	50.0 (44 – 56)
SEI	820	100.0		
I		8.7		
Assistant nurse	71	8.7		
II	205	25.0		
Dental nurse (assistant)	104	12.7		
Medical secretary	51	6.2		
Administrative staff	50	6.1		
III	376	45.8		
Nurse	51	6.2		
District nurse	159	19.4		
Midwife	36	4.4		
Dental hygienist	38	4.6		
Physiotherapist	56	6.8		
Occupational therapist	36	4.4		
IV	168	20.5		
Physician	77	9.4		
Dentist	63	7.7		
Psychologist	28	3.4		

5.2.2 Creation of new attitudes

Strategic communication contributed to nearly 97% of the informants having obtained knowledge of R&D, of whom 60% acquired an interest in it. The communication resulted in 60% developing new thoughts and ideas, while a further 34% changed or intended changing their work practices. All results were statistically significant (Table 5).

***Table 5.** The change in attitudes among primary care staff due to strategic communication; from knowledge of and interest in R&D to innovation and desire for change.*

	n	(%)	Chi-square	p-value
Acquired knowledge	592	96.6	531.9	<0.0001
Became interested	323	60.3	22.6	<0.0001
New way of thinking	314	61.4	26.8	<0.0001
Changed or intended changing work practices	153	34.3	43.9	<0.0001

5.2.3 The role of the communication channels in changing attitude

All communication channels contributed to a significant change in attitude in relation to R&D, but to varying degrees. The oral channel had the greatest influence on the creation of interest and innovative thinking. The written channel contributed the most to staff members' knowledge of R&D but did not have any significant influence on their interest or willingness to change. The synergy effect between the three channels contributed to the positive development from knowledge to willingness to change (Table 6). The result of the multivariate analysis indicated that knowledge and interest increased significantly with age ($p=0.007$) and that interest was inversely correlated with age ($p=0.005$). Gender had no significant impact on knowledge and interest.

Table 6. *The association between the communication channels, their synergy effect and the implementation process from the creation of knowledge and interest to innovation and a changed attitude among primary care staff. Multiple logistic regression with the background variables of age, sex and SEI was used.*

	KNOWLEDGE		INTEREST		INNOVATION		CHANGE	
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Oral	6.3	2.9–13.7	3.6	2.6–5.1	3.5	2.4–5.0	2.0	1.3–3.0
Written	7.9	3.9–16.1	1.7	0.6–1.5	1.5	0.8–2.7	1.7	0.8–3.8
Digital	2.2	1.2–4.4	3.1	2.2–4.4	2.7	1.9–4.0	2.1	1.4–3.1
Synergy	4.1	2.7–6.0	2.9	2.3–3.7	2.3	1.8–2.9	1.8	1.4–2.3

Source; knowledge, interest, innovation and change were based on the items 10, 12 and 14 in Appendix 1.

5.2.4 The role of direct and indirect communication

Strategic communication was implemented using two approaches: direct and indirect. Both contributed significantly to innovative attitudes in the form of creative thinking (new ideas and thoughts) and willingness to change everyday work practices in the context of care ($p < 0.05$). The oral channels were more effective than the written ones, both in terms of innovation and willingness to change. Staff members with experience of arenas adapted to the target group, where personal contacts took place in different forums for dialogue such as seminars, annual research days and courses, reported that such forums contributed to the creation of new ideas and thoughts as well as willingness to change in the context of everyday care ($p < 0.05$) (Figure 5). Knowledge correlated positively with age but negatively with interest. Age was not correlated with innovation or change, nor with sex. The physician category (SEI IV) was less exposed to the R&D information in terms of creating interest, as part of their information was derived externally.

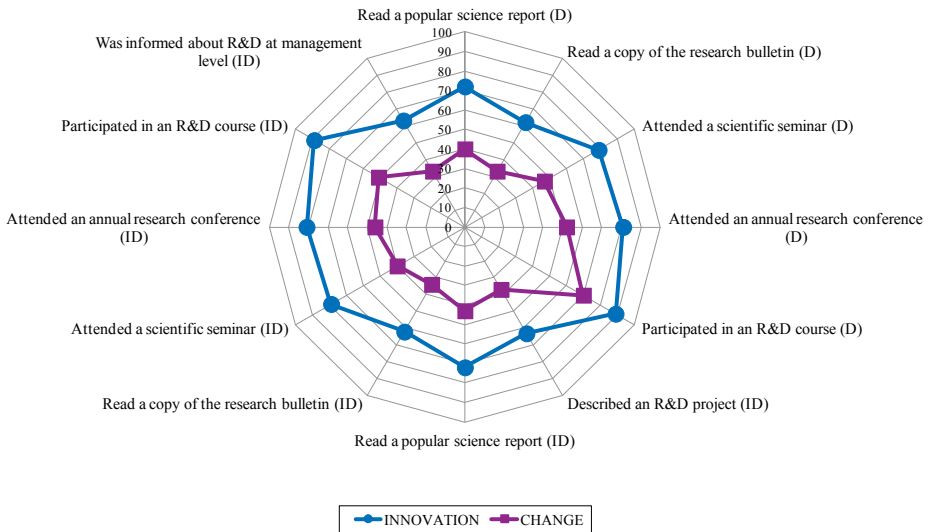


Figure 5. Impact of the direct (D) and indirect (ID) communication channels on the creation of new ideas and thoughts as well as willingness to change existing work practices among primary care staff. 100 represents maximal impact.

5.2.5 The impact of the strategic communication among SEI groups

Strategic communication contributed to the creation of knowledge among all staff members irrespective of SEI group ($p < 0.0001$) as well as interest among the SEI I-III group members ($p < 0.001$). Creativity in the form of new thoughts and ideas followed by willingness to change work practices was great among staff members, but most apparent among SEI group III, which mainly comprised nurses ($p < 0.05$).

5.2.6 Identification of barriers

The question “What is the reason for the lack of interest in research and development?” was answered by 106 employees. The participants’ narratives consisted of 58 meaning units related to the aim of the study, which were grouped into three categories, indicating the attitude towards R&D among the members of the organisation. The narratives revealed that R&D was regarded as the preserve of specific professional categories and had low priority compared to the practical provision of care. The organisational culture was found to be a significant barrier to staff members’ change in attitude (Table 7). Regarding the category “only concerns some staff”, the employees who belonged to a lower SEI group, especially assistant nurses, stated that they did not believe research and development to be relevant to their professional category, but only to higher SEI groups.

Table 7. Codes, categories and theme that emerged from the qualitative content analysis of the open-ended question about “The reason for the lack of interest in research and development”.

Meaning unit	Condensed meaning unit	Code	Category	Theme
I am not interested because it has no relevance to my work	Could find no relevance to work	Not necessary for my work	Research and development only concerns some staff members	
I understood that it primarily concerns healthcare staff	Mainly concerns healthcare staff	Only for those involved in the care work		
I did not understand that it targets my professional role	Does not concern my professional role	Failure to understand that it concerns everyone		
I did not gain the impression that the information was aimed at assistant nurses	Failure to understand that the information concerned assistant nurses	Did not believe that research and development concerned assistant nurses		
The employer does not remunerate travel expenses or studies during working hours and does not put a premium on competence development	The employer does not prioritize competence development	Not prioritized	Research and development is regarded as a low priority area	The importance of the organizational culture
Politicians only take care performance into account and have a negative view of education and research and development	Politicians do not prioritize competence development	Not prioritized		
No central funds available	Lack of central funds	Financial reason		
Lack of support in terms of not providing time for studies	Lack of support	Employer does not provide support	Clinical practice has a higher priority than Research and development	
Lack of time, high patient levels	Lack of time, too many patients	Lack of time during working hours		
No time, patients are prioritized	Lack of time in one’s work	Lack of time during working hours		
I don’t have time for research in my daily activities	No time during daily activities	Lack of time during working hours		

5.3 Influence of the organisational culture (Paper III)

5.3.1 Organisational culture in primary care

The study population comprised primary care employees in one care centre and included general practitioners (20%), nurses (43%), medical secretaries (17%), assistant nurses (13%), a psychologist and a manager, a total of 30 individuals. Their average age was 54 years, while that of employees in the whole of the organisation was 48 years. Sixteen individuals had been employed in primary care in Halland for more than 25 years. The results of the field study elucidated the role played by organisational culture in shaping the staff members' attitude to R&D. The norms and values prevailing in the study unit were in many respects characteristic of traditional care with 'care production' the prioritised area. Although the unit acted as a unified and closely knit entity, there were nevertheless sub-groups that exhibited a unique stance to R&D. Staff members' attitudes were divided into three themes.

Change is positive but is it necessary?

There was a considerable degree of freedom in terms of positive reception of the research message, as long as the introduction of an R&D inspired mode of thinking did not exceed the financial framework. Moreover, the care centre's standpoint on continued R&D was dependent on whether there was a comprehensive directive or policy related to such activities. Continued research activities could thereby acquire legitimacy. The importance of a comprehensive policy was highlighted when it emerged that mid-level managers found it difficult to take decisions unless written rules and paragraphs were in place. The unit's hierarchical structure gave priority to R&D as a positive activity but only for certain prioritised sub-groups.

The structural hierarchy was visible through various symbolic expressions throughout the organisation. For example, the division of offices could be described as a material symbol. Another example was the morning meetings where the manager informed and the members listened in silence without a dialogue taking place. A review of the unit's documentation such as the annual plan and report revealed that academic education was considered a privilege for those who already had a high educational level.

Ingrained in the walls

The socialisation of personnel into their subjectively accepted professional roles was a legacy from their education, when knowledge was usually based on the norms of the hierarchical structure. Thus, socialisation had become a

barrier to staff members' development, as it contributed to their inherited attitude. When their wishes did not meet with approval, such members frequently sought employment outside the context.

Another observation was that all staff members, irrespective of professional category, sat together in the coffee room, whereas they were grouped according to profession in, for example, the lunchroom. This prevailing principle reflects the lifestyle pattern, where status and power play a clear role when it comes to choosing homogeneous relationships. Consequently, socialisation becomes still clearer when the invisible norms are revealed by the behaviour in the context in terms of the general standpoints taken.

Knowledge – a prerequisite for acceptance

In this context, knowledge was regarded as acceptable in the form of further development within the framework of professional roles and not as a scientific platform, while research was considered a waste of resources. The invisible factors in the organisation influenced the group's willingness to change, leading to stagnation. The invisible norms included demographic factors, which were also culturally based, as staff members who had qualified many years ago were automatically excluded from the discussion about future financial investment. The combination of a management socialised into the traditional leadership culture and the individual acceptance of the reality strongly contributed to the existing culture.

5.4 Change in behaviour in the long term (Paper IV)

5.4.1 Staff cohort

A total of 352 individuals participated on the two measurement occasions, 92% of whom were women with an average age of 53.8 years (SD 7.4). The largest SEI group, III (48%), mostly comprised nurses. SEI group II (28%) was the second largest followed by group IV (16%), made up of physicians, dentists and psychologists. The lowest proportion of participants was found in SEI group I (8%). Dropouts were those who did not respond to the questionnaire due to study, parental or sick leave, those who had not completed it correctly and those no longer employed in primary care (lost to follow-up). This figure corresponded to 60% of the primary care staff members who remained in the organisation after 12 years and participated in the study.

5.4.2 Stable development in terms of change in attitude

Staff members' attitude to the new way of thinking was found to be stable over time and increased significantly from 61% in 2004 to 67% in 2009. Similarly, the willingness to change work practices increased from 36% to 45%, which was statistically significant (Figure 6).

5.4.3 Improved communication channel utilisation

The utilisation of all communication channels increased significantly over time. The oral channel accounted for the largest increase from 46% on measurement occasion 1 to 63% on occasion 2. Use of the digital channel developed significantly from 42% to 47%. There was also an increase in the utilisation of the written channel over time, from 93% to 96%, i.e. almost all employees had seen or read the R&D news bulletin (Figure 6).

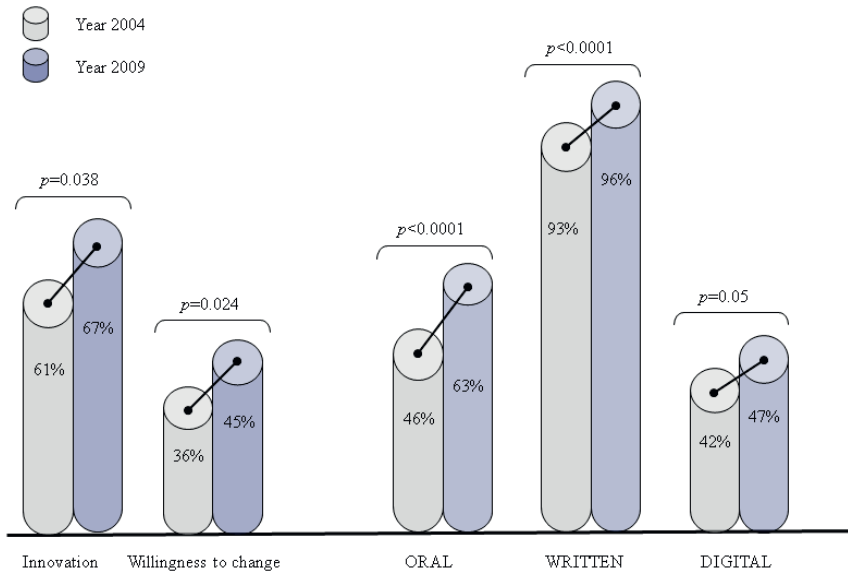


Figure 6. Stable development of change in attitudes as well as improved utilisation of communication channels over time. The Chi-square test was employed.

The synergy effect due to the interaction between the three communication channels improved from 2004 (Mean=3.18; SD=1.5) to 2009 (Mean 3.56; SD=1.5), which increase was statistically significant (95% CI=0.37–0.68).

5.4.4 Improved communication and change in attitude

The provision of strategic communication on a continuous basis led to stability as well as an increased number of staff members adopting the new way of thinking and willingness to change work practices. Both the oral and the digital channel had a significantly positive effect on new thinking and willingness to change over time. This meant that members who had continuous contact with the oral and the written channel maintained and improved their attitude to change compared to those who had only visited these channels on the first occasion or did not use them at all. The result was adjusted for the background variables of age and sex (Table 8). There was no difference between the SEI groups in terms of these items.

Table 8: *The impact of the communication channels on change in attitude over time among primary care staff. The two occasions (2004 and 2009) were compared. Multiple logistic regression was employed (n=352).*

Implementation process	n	OR	95% CI
Dependent variable:	Independent variables:		
Improvement in new thoughts and ideas	Improvement in Communication utilization		
	202		
	Sex: Male=0, Female=1	2.10	0.69 – 6.37
	Age	1.04	0.99 – 1.08
	Oral	3.09	1.53 – 6.23
	205		
	Sex: Male=0, Female=1	2.26	0.75 – 6.80
	Age	1.03	0.99 – 1.08
	Digital	3.11	1.55 – 6.22
Improvement in willingness to change work practices	209		
	149		
	Sex: Male=0, Female=1	1.13	0.34 – 3.70
	Age	1.01	0.97 – 1.05
	Oral	2.32	1.13 – 4.77
	152		
	Sex: Male=0, Female=1	0.99	0.31 – 3.20
	Age	0.99	0.95 – 1.04
	Digital	3.41	1.72 – 6.74

Improvement: the difference between the 2004 and 2009 measurements in terms of the written channel. Because of the very small difference between the two measurements (only 3 cases) the written channel was not included in the analysis.

5.4.5 The role of synergy

The synergy effect derived from the interaction between the communication channels played a significant role in staff members' changed attitude over time. In terms of innovation (new way of thinking) and willingness to change work practices, the synergy effect was identical. When adjusted for age, sex and SEI, the net synergy effect revealed a significant improvement, which corresponded with the average improvement (Figure 7).

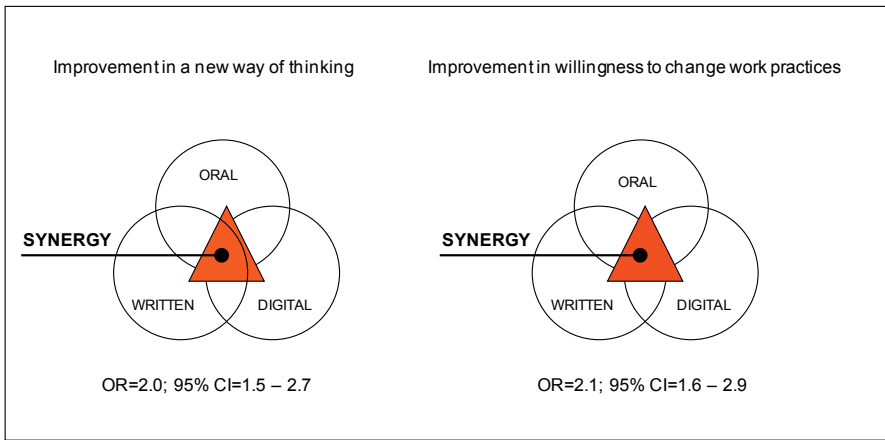


Figure 7. The influence of the communication channels' synergy effect on new ways of thinking as well as willingness to change work practices among primary care staff ($n=352$).

5.4.6 Years of practice as an important factor

Multiple logistic regression was employed to analyse the influence of years of practice on willingness to change. The result revealed a negative attitude to change in work practices, which became stronger in line with more years of practice ($\beta= -0.03$; $p=0.024$). When the impact of large organisational changes was included in the analysis, it was found that staff members who were less flexible in relation to organisational changes accepted existing work practices to a greater extent and had no wish to change them ($\beta= -1.00$; $p=0.001$).

5.4.7 Profiling of the R&D Ambassador network

The longitudinal intervention consisted of the formation of a network comprising those employees who had undergone courses in research methodology and shown an interest in critical thinking and innovative visions within R&D. During the final two years this network managed to create a distinctive image for itself in the sense that 24% of primary care staff members were aware of it and its activities. This knowledge was associated with a positive change in terms of new thinking among those members compared with the remainder who were unaware of its existence (OR=5.5; CI=5.2–15.7).

5.5 The final evaluation of the cohort

The strategic communication was first used to bring about a change in attitude among primary care employees by focusing on knowledge and interest followed by a new way of thinking and willingness to change work practices. In the short term, almost all personnel increased their knowledge and more than half became interested in R&D after the start of the R&D unit's communication intervention. Follow-up of the change process in terms of staff members' attitude revealed that more than every second participant in the study had acquired a new way of thinking and that every third had changed or intended changing her/his work practices. The longitudinal follow up demonstrated that the trend of change in staff members' attitudes was stable and improved over time. For a schematic description, see Figure 8.

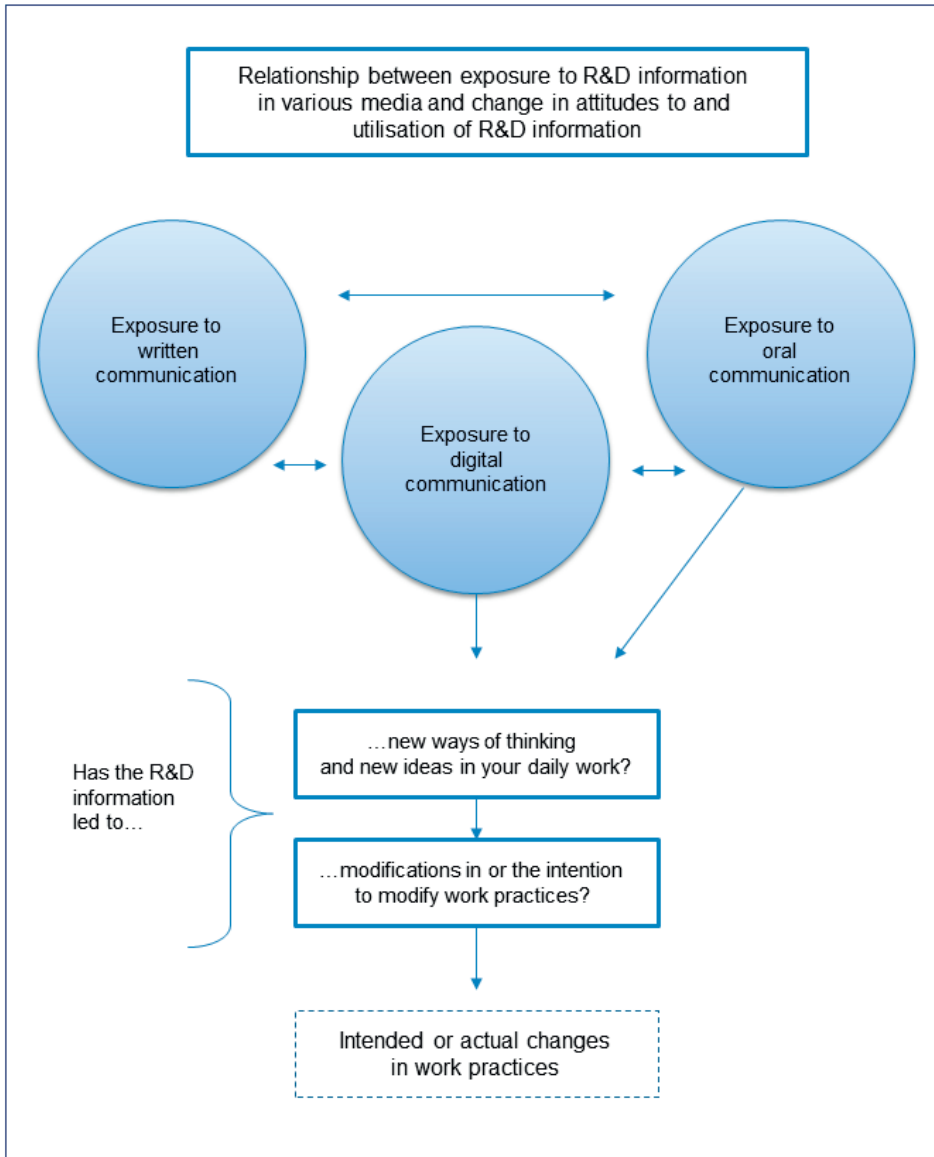


Figure 8. Utilisation of the communication channels and their synergy effect as a factor of importance for primary care staff members' new way of thinking and willingness to change their work practices($n=352$).

6 DISCUSSION

6.1 Method issues

Epistemological and ontological frame

The research field is often influenced by the researcher's philosophical and methodological outlook as well as personal interest. Traditionally, the quantitative approach has dominated the methodological panorama in most research areas. However, qualitative research is the norm in certain social science fields [119] and contributes an extra dimension to the quest for the truth [120]. In qualitative research, the methodological approach comprising observations and interviews enables an interactive process between the researcher and the phenomenon under study [118] and allows the researcher to probe more deeply than is the case with quantitative research. However, the choice of methods should not be governed by the researcher's outlook but by the research question. In this thesis, hypothesis based quantitative methods are combined with qualitative ones in order to reduce bias in the results and strengthen the relevance of the conclusions. Moreover, the qualitative ethnographic method was employed to provide an additional dimension in order to obtain as holistic a perspective as possible on primary care staff members' willingness to change [110].

Limitations and strengths

Theoretical approach

Communication and implementation research in areas such as sociology, psychology and political science has recommended the use of a theoretical framework [11, 45, 82, 121], while other researchers are opposed the use of theories in an implementation context [122-123], instead advocating common sense and empirical methods. The present thesis was influenced by a theoretical platform both in the design of the communication plan and in the performance of the intervention. The use of theories, models and frameworks increases the possibility of generalising the conclusions and contributes knowledge about what works and does not work [124].

Design

When conducting a prospective study, baseline information that can be used for follow-up is methodologically important. We found that under the given circumstances no quantified baseline data were available. An analysis of the general state of the research culture in the context under study conducted by the County Council shortly before the intervention revealed that it lacked an

R&D tradition [39]. The analysis was therefore complemented by the researcher's perception based on many years' employment in the context. It was not considered relevant to inquire about the staffs level of R&D intention, as it was more or less non-existent. Instead, the follow-up questions were designed in such a way that the participants themselves stated whether or not their intention to engage in R&D had been directly influenced by the strategic communication. The intervention included all primary care staff in Region Halland, and thus comparable controls from other county councils in Sweden were required. However, no such control group was recruited, the main reason being the disparity between existing national R&D units as well as the lack of uniformity of the information activities in these organisations. First, the selection of controls would not meet the requirement on inclusion criteria [125-126] and second, it would give rise to the influence of hidden confounders in the measurements.

The thesis is based on a staff cohort over a 12-year period. The prospective design made it possible to follow up the long term influence of the intervention, thus providing a better picture of the resulting impact compared to ad hoc interventions. The intervention comprised all primary care staff in the region (total population cohort), which enabled analyses of sub-groups during follow-up. Another important factor was the SEI classification of occupational codes, which indicates the social level of the professions. As the social aspect is important, it is essential to use SEI classifications when studying attitude and change processes [127]. The analysis was further strengthened by amalgamating occupational groups into larger sub groups.

The fact that the design of the intervention comprised all professional categories was a further point of significance [30]. This is an important factor in the creation of new ways of thinking and a culture characterised by intention to engage in R&D across the whole care chain. Moreover, the implementation was targeted, i.e. the dissemination of R&D information and the R&D activities conducted varied depending on the occupational category in question. This was expected to produce a better implementation outcome in terms of staff members' intention to engage in R&D in general.

Management of instrument (paper I, II and IV)

A validated questionnaire is preferable for research purposes [128]. As no such validated questionnaire could be found, our self-designed questionnaire underwent a validation process. The items about communication channels were validated before and during follow-up (occasion I) [128-130] as well as during the final evaluation (occasion II), yielding an identical result (using

the same factors). This should be considered a significant validation of the items.

Data analysis

Quantitative (paper I, II and IV): The items were validated on two occasions using factor analysis, see above. This type of analysis is especially suitable for items with a rating scale [95-96]. As optimal utilisation of the test is achieved with numerical (parametric) data, the obtained factors were checked by means of Spearman's correlation, which indicated equal correlations between items [101]. Charles Spearman, the legendary statistician, was the first to advocate the scale for use in psychology and cognitive treatment, where self-reported perceptions play a central role [131-132].

Staff members' active participation in the survey (70%) yielded a robust foundation for various analyses and facilitated relevant conclusions. When adjustment of relevant confounders is taken into account, use of multivariate instead of bivariate analyses can be regarded as more refined and was therefore employed in these studies.

Qualitative (paper I and III): It could be assumed that the researcher had acquired a preunderstanding in relation to the interpretations, as she had previously worked in the context in question [107, 109]. Consequently, it was vital not to 'go native' [109], something the researcher was well aware of. However, this familiarity contributed to a quicker entry into the context [109] and an understanding of the invisible level with its tacit message was achieved sooner than is normally the case in an ethnographic study. The role of preunderstanding was discussed among the research team and reflected upon throughout the study. The quotations presented in the Results section were chosen due to their being grounded in everyday life, bearing in mind the intention not to harm or reveal the identity of any individual or organisation. Different theories as well as quantitative and qualitative methods (mixed methods) were employed to provide a more comprehensive insight into the problems [133].

General principal

Despite the fact that follow up and evaluation of self constructed cohorts take place continuously in medical research, there is a risk of the researcher making interpretations on the basis of her/his own interpretative frameworks instead of those prevailing in the studied organisation [134]. However, this can be justifiable if maintaining a neutral stance in the planning, implementation and analysis phases of a study. The same principle applies to

the researcher's affiliation with the R&D unit. Moreover, the interdisciplinary composition of the team comprising professionals from the areas of medicine, biostatistics, nursing and strategic communication further strengthens the study.

Although there are differences among the R&D organisations in Sweden, primary care with its responsibility for the health of members of the public has been organised in a more or less similar manner [135]. As there are no great regional differences between the structural conditions of primary care, the findings of this thesis can be generalised, although with some caution, to primary care organisations in the whole of Sweden.

6.2 Result discussion

6.2.1 Knowledge and interest

The initial step in planning the strategic communication was to enable as many employees as possible to gain knowledge of and become interested in R&D. As this concept was relatively new to the context [16, 39], great emphasis was placed on diffusing and gaining acceptance for R&D, thus its importance for staff members' personal development as well as its usefulness to the organisation as a whole was highlighted.

Study I demonstrated that strategic communication had resulted in an overwhelming majority of primary care staff gaining knowledge about R&D through the various communication channels [59, 83, 136], which probably reflects the appropriateness of the message, its linguistic form and the mix of communication channels. It is important to use a popular science language when addressing target groups that are not familiar with academic language [2-3]. Knowledge of R&D can be seen as a first step in the development of interest and R&D activities, which is consistent with the process of achieving a change of attitude [59, 136]. More than half of those who had gained knowledge also became interested in R&D, which is in line with the diffusion of innovation theory [82]. An innovation process requires time, as some members are quicker than others when it comes to assimilating the innovation [82]. The advantage of this development was that R&D received increased attention, curiosity was stimulated and R&D became a topic of discussion [55, 58]. This may be the reason behind staff members starting to request research methodology courses as well as attending seminars and R&D days.

Goal: The information should reach all members

The purpose of the intervention was for all members to gain knowledge of and become interested in R&D, including those who initially had no intention of conducting research (study I). In addition, they should all be given the opportunity to become more research minded as a basis for the future knowledge process in the organisation. Most implementation interventions have a specific direction in that they focus on individual professional categories. There are, for example, studies of nurses that describe implementation processes and the barriers encountered [137] as well as those that illuminate implementation interventions from the perspective of physicians or physicians and nurses [138-142]. Although the importance of a multidisciplinary and interprofessional implementation has been highlighted [143] the role of the whole context has not been focused on to the same

extent [144]. By involving all professional categories within a context, everyone can feel included and take part in the discussions. The involvement of different professional categories in most aspects of the implementation process that concern the whole care chain is recommended from a practical and personal perspective as well as for the patients' benefit [30, 53].

The result demonstrated that all professional categories including assistant nurses had become interested in R&D (study I). The interest of the latter group is valuable in terms of patient care, as optimal team building should include all professional categories [30]. However, assistant nurses reported that they were less interested in research than the other groups, which is understandable, as the prevailing research culture was more or less reserved for those with the highest education [145-146].

The group with the greatest interest

The group exhibiting the greatest interest in R&D was SEI group III, which mostly comprised nurses (study I). This result accords with studies demonstrating a greater interest in R&D among registered nurses compared to, for example, doctors and assistant nurses [53], something that has been focused upon in international studies carried out in Australia and Great Britain [147-148]. One likely explanation is the fact that today, scientific studies are an integrated part of nursing education, thus promoting interest in the subject in a natural way [145, 149]. Seen from the perspective of the organisation, a widespread interest in R&D among nurses is beneficial, as they represent the largest professional group with close patient contact. Furthermore, the rapid development of working methods also places demands on physiotherapists and occupational therapists to practise critical thinking and use EBP [150-151].

Implementation process

The strategy was for all staff members to accept the scientific mode of thinking by using role models from different professional categories, not least through the written channel, which was employed by more or less all members (study I). The R&D news bulletin was formulated in popular science language and intended to create knowledge of R&D. It was updated on a regular basis, which was important for disseminating information about ongoing and upcoming R&D activities such as courses, lectures and Annual research days, but also for presenting reports, images and news from e.g. an Annual research day, all of which was aimed at attracting readers. The bulletin also served to present and create an image of role models [83] such as in a series of reports where a participant was followed for the duration of a research methodology course. It was placed in the coffee rooms, as it was

assumed that this would increase the chance of its content becoming a topic of conversation, more so than by sending it to staff members' home addresses. It was deemed a risk to send the bulletin to the head of department, who might act as a gatekeeper [82, 152] and leave it on the desk or forward it to a person that she/he considered should read it.

The term media richness was coined in the 1980s and has since become the most common research framework for organisations' media use [153]. Media richness describes a medium's potential to achieve its target in various ways. The theory is often employed in communication planning in order to utilise the right channel for selectivity and interactivity purposes (Figure 9).

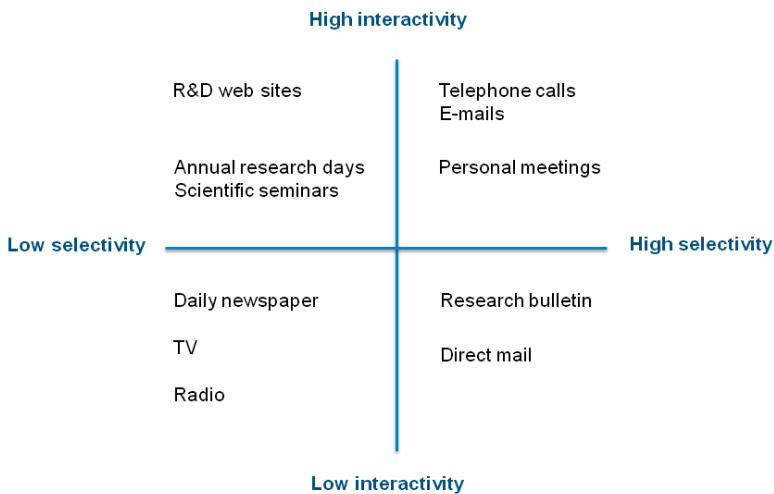


Figure 9. The role of the communication channels from the perspective of the Media richness theory [153].

It is recognised that in-house magazines are frequently widely read but do not always have a far-reaching effect [153], which was partly confirmed by study I. A majority of those employees who read the R&D news bulletin had gained knowledge of R&D but without their interest being raised to any great extent. The influence of the oral channels on the employees' interest was also linked to dialogue and interaction and thus in line with this theory.

Barriers to innovation

It is well-known that it takes time to achieve a change in attitudes and behaviour [154]. The result of study I revealed many barriers such as lack of time, availability of literature in the employee's native language, help and support, which has also been described and discussed in similar contexts [141, 155-156]. Some of these barriers are related to the prevailing organisational culture and should therefore be taken into account in future implementation of new thinking [14, 141, 155]. In strategic communication it is considered natural to try to understand how an organisation's culture has emerged as well as to identify similarities and differences. The interpretation of this situation is complex, as the staff members themselves create the culture and there is no standard culture in a unit. As some of the units within the cohort that expressed an interest in R&D did not progress any further, it was considered important to probe more deeply and gain more knowledge about this aspect, resulting in the ethnographic study (study III).

6.2.2 The role of the organisational culture

Research on change has highlighted the significance of the composition of the context and the organisational culture [65]. Norms, values, attitudes and beliefs govern both the individual and the group, which was confirmed in the ethnographic study (study III). The result pertaining to the content focused upon in this thesis was in agreement with Schein's three levels of organisational culture [62], see Figure 10.



Figure 10. The different levels of organisational culture related to Schein's iceberg model of culture [62].

The levels of organisational culture

Study III established that, at the visible level, the structural parts of the organisational culture were evident to all employees. In a hierarchical organisation, the frameworks are fixed, a policy exists and it is not easy to influence the organisational culture from the outside [157-159]. At this level we also find the demographic factors of sex, age and profession, which cannot be changed.

At the semi-visible level, where the staff members are aware of and aspire to positive norms, values and attitudes, 'key persons' (formal or informal leaders) influence the culture as role models [157]. At the managerial level, managers have the role of gatekeepers [152]. By prioritising R&D based on staff members' age and educational level, some are probably intentionally or unintentionally filtered out, which is interpreted as a screening of educational opportunities. In addition, a clear division of professional categories was evident in the present study, as well as which roles and expectations staff placed on each other. Professional roles and socialisation into the profession are two important factors that should be taken into account in a hierarchical organisation such as the health care services [160]. The socialisation process is rapid, as revealed by a study demonstrating that two years after finishing their education, registered nurses had significantly reduced their use of research [161].

The invisible level within an organisation is not expressed but requires time and involvement within the context to be able to distinguish it [62]. Here, underlying norms and values are evident at both individual and group level. Socialisation takes place on the conditions of the organisational culture, despite a strong social and sociodemographic affiliation. Internalisation has occurred when socialisation is taken for granted [162]. The interpretation at the primary care centre investigated was that, despite the positive attitude to R&D, there was no scope for further promoting it due to the high priority placed on ordinary activities. This situation, which is common, clearly confirms the gap that exists between research and practice [1-4]. Priority was not placed on research but on operational development of the unit. The reason was probably the fact that an organisational change was planned that only involved production. Another contributory factor was the unit's relatively 'isolated situation', with hardly any input from other units. The external social isolation was accompanied by internal sub-grouping of different professional categories. For successful implementation it is an advantage if the group in question is a team comprising different professional categories [30, 53]. Although interprofessional team building is considered favourable with regard to learning, problems and barriers exist in terms of values, perspectives, understanding and role conflicts [144] and in most cases also organisational barriers in the form of hierarchical layers within health care [163]. Staff members often regarded change as negative, probably because they had been involved in several reorganisations but without being personally affected by them. In many organisations, an explanation for the unwillingness to change may be narcissism [164], where no group member is allowed to change or change anything, as it can jeopardise the existing organisational culture. The existing culture is often blamed for the collapse of

an organisation and criticised for “being change resistant: closed to new ideas, lacking an innovative spirit and too slow to respond to fast-changing customer needs” [65].

The prerequisite for changing an organisational culture

The ethnographic study (III) revealed that the group was firmly rooted in their belief that R&D constitutes a world apart from their own. In this respect, the management has an important role in discussing visions for the future, such as how changes will be implemented. A supportive organisation is one of the most important preconditions for an optimal process of implementing new phenomena [165]. Organisational support requires resources such as time, finances and personnel but also a positive attitude to new thinking and professional development as well as good preparedness for change [165]. However, there is less discussion about the role of the organisational culture as a whole in relation to the unit’s future vision and goals. When management is prepared to change the existing culture, a more reflective insight into the members’ attitudes is required [166]. In order to reach the invisible level of the organisational culture, this is especially necessary in terms of taken for granted attitudes [62]. There must also be a dialogue between the management and staff members with regard to the underlying attitudes, norms and values that govern planning, decisions and actions [66]. This needs to be highlighted to a greater extent in the implementation of methods and new thinking such as research mindedness and intention to engage in R&D.

6.2.3 New thinking and willingness to change

Behavioural change is frequently a time-consuming process [154]. The clear result obtained in a seven-year period can therefore be considered remarkable (study II). For this reason it was a great challenge to attempt to achieve a similar result over a longer period. After an additional five years, the same individuals responded that they had increased their level of new thinking as well as their willingness to change work practices even further (study IV). This development was irrespective of SEI category and in line with the aim of the intervention, namely that the whole care chain should be targeted in the long-term intention to engage in R&D. The outcome can serve to promote future implementation of EBP in the context, where the commitment of all employees is vital [30]. By adapting the message to the target group and, more importantly, not using overly scientific language, it was deemed possible to reach a larger group comprising various professional categories. The pedagogical platform may also have contributed to the intention to engage in R&D being firmly anchored within the context [167-168].

The role of strategic communication

In the short term, strategic communication via direct and indirect channels contributed to all professional categories adopting new thinking and ideas as well as wanting to change work practices (study II). The positive synergy effect between the channels contributed to the results as well as the fact that the oral channel was most successful in terms of R&D intention in both the short and the long term (studies II and IV). This is in agreement with the theory of media richness [153]. Another important aspect of the oral communication strategy was to increase self-efficacy [60] among staff members by means of daily contact, seminars or meetings adapted to the target group, in which they received encouragement and support to progress from idea to R&D activity.

Choice of a long-term media strategy

The strategic communication was aimed at maintaining and promoting new thinking and willingness to change in the long term (study IV). The choice of media strategy was governed by the communication goals and the message strategy. Two basic strategies were used: ‘carpet bombing’ and ‘organic growth’ [58]. The use of the latter media strategy was relevant due to the goal of the communication, which was to disseminate knowledge of and interest in R&D in a continuous process over time leading to preparedness to change. The benefit of a long-term ambition is that it creates stability in the attitude to change, which is regarded as favourable for the time-consuming process of creating an organisational culture [154]. However, during the intervention,

hidden confounders may play a significant role and influence the identification of its effect. Studies have found that the longer an individual has been employed in the same workplace, the less her/his willingness to utilise research findings [161]. One potential confounder in this context is organisational culture. In study IV it was established that the likelihood of a change in work practices was correlated with the length of employment within the context, i.e. the longer the period of employment, the lower the likelihood of willingness to change work practices. However, of greatest interest was the finding that those who were positive to organisational change were more willing to alter their work practices, a finding not reported in other studies.

The role of context and culture in conjunction with change is well known and has also been demonstrated in implementation studies [169-172]. The ethnographic investigation (study III) showed that there were two separate worlds; theory and practice. Thus, an important aspect of the intervention was to integrate them by means of, among other things, network building.

The importance of networks

In less than two years, the R&D ambassadors had positioned themselves as a resource within the context and the staff members were well aware of their existence (study IV). In addition, there was a strong association between new thinking on the part of staff and knowledge of the network. The role of these ambassadors was to motivate individual staff members to attend, for example, courses but also to act as research role models, stimulating others to copy them and start their own projects. Role models have been successfully employed in the context of learning, for example, when nursing students learn from nurses [157]. The researchers and course participants who had received information about R&D in various ways in turn disseminated it to their own target groups according to a two-step hypothesis. Previous studies have described and charted the significance of networks for the introduction of innovations [8, 84-85]. The R&D ambassador network can therefore be assumed to have had a positive effect in terms of serving as a bridge between the theoretical-scientific world and practice. It emerged from the ethnographic study (study III) that staff members were fairly isolated and had a low level of R&D activity. The organisation would profit from staff members who, after completion of an R&D course, opt to become ambassadors. These ambassadors are not only able to identify the need for R&D in their own unit but also the way in which innovative thinking can best be introduced. If preparedness for change is present, the effect of a familiar person encouraging and stimulating an individual or a group to achieve higher self-efficacy is greatly enhanced [60-61]. Over time, this will

contribute to more openness to change on the part of organisational cultures characterised by resistance.

Studies have emphasised the importance of integrating academic and service initiatives [89-93]. Different types of organisation are linked to various network profiles, which among other things is due to the availability of collaborative partners. The structure and implementation conditions differ depending on whether the networks are linked to university or university hospital researchers or to researchers at other primary care organisations. In both cases, it takes time for the members of the network to become familiar to the staff members, and the R&D ambassador network was no exception. In a longitudinal follow-up almost two years after the introduction of the network, the staff members had just gained knowledge thereof (study IV). During this time, the network had received various benefits in the form of advanced courses, lectures and its own on-line magazine and web site to facilitate the communication of new knowledge to its members over time. Furthermore, it is important that capacity-building networks are constructed from the 'bottom-up' [90], where the members themselves have the opportunity to support and motivate each other through network meetings and educational interventions. The goal was for the network members to act as role models in the unit in the long term. In this way, they can act in a top-down manner, where they legitimise and create research resources for their colleagues, as well as from the bottom-up, by identifying the need for research and raising the issue in the group. All staff members need to be involved in order to promote the integration of a scientific mode of thinking in clinical practice [93].

6.3 General discussion

6.3.1 A long-term investment

The strategic communication contributed to a shift in paradigm within primary care in Region Halland. All professional categories irrespective of SEI group increased their intention to engage in R&D and acquired a clear willingness to change existing work practices. This situation is in line with recent developments within health care in general, which indicates a significantly increased interest in the implementation of new methods and research findings in clinical practice [43]. This greater interest is necessary, considering the low level of utilisation of research findings [173], despite access to established implementation platforms such as PARIHS [48-49]. This thesis contributes a preparatory level that is lacking in existing models. The most important insight concerns influencing staff members to think critically and adopt a scientific mindset, thus preparing them for change prior to the actual implementation. Such preparation is vital to enable all staff categories to evaluate and reflect on the research findings to be implemented [174]. Moreover, the increasing scientification within health care is necessary and demands that staff members possess scientific competence. Consequently, a long-term investment in research and innovation is of fundamental importance for its continued existence and requires both new thinking and innovators in the field. In the practical context, research and innovation should be carried out in cooperation between the parties involved [175]. As a learning organisation, the health services must possess R&D knowledge in order to act as a cooperation partner with industry, pharmaceutical companies, universities and university colleges [175].

6.3.2 Care production in competition with R&D

A major organisational change took place during the intervention period, which meant that members of the public were free to seek primary care within the region irrespective of place of residence (Choice of care) [38]. The new model leads to competition between health care centres as well as increased production volume. Exposure to competition means that every Swedish krona allocated to patient care is weighted against other activities and therefore R&D is regarded as a burden because the actual benefit is not immediately apparent. Discussion is also taking place nationally, as general practitioners involved in research claim that allowing patients to choose which primary care centre to attend pulls the carpet from under the feet of the research conducted there, which is a prerequisite for high quality primary care and general practice [176]. A possible consequence is the risk of primary

care losing credibility as well as poorer quality throughout the Swedish health care system [30]. A research culture that is open and that allows staff members to participate has a positive impact on the work environment and personal development, which in turn strengthens the unit's competitiveness. A promotive research culture demands not only personal commitment but also, and not least, a supportive policy implemented from the top down [177]. Before the selection of the primary care cohort, Halland had such a supportive R&D policy [39].

6.3.3 Bridging the gap between policy and R&D

During the intervention, the need for a continuous dialogue between politicians, top management and unit managers became clear. It also emerged that the policy should be further developed in order to counteract negative attitudes and circumstances that constituted barriers to R&D. Another promotive measure is a plan for enhancing the status of those who have attained research merits. In 2008, such a measure, which took the form of an action plan, was put in place in south eastern Sweden by Östergötland county council in consultation with the Faculty of Health sciences at Linköping university; R&D in occupational development. The plan set out a number of measures aimed at a more effective utilisation of R&D in operational and individual development in addition to direct actions to strengthen the value of R&D merits in health care [178].

An important aspect in terms of bridging the gap between policy and action is trust on the part of policy makers that research can constitute an integrated part of the activities, i.e. a long-term investment in research mindedness within the organisation and not an ad hoc campaign with short-term outcomes. This fundamental principle can be realised by bringing together the ceiling (politicians) and floor (staff members) of the organisation. The political aspect of this process is influenced by two important main principles [177]. According to the first, management should join forces with innovative personnel on the floor in a mutual effort to work towards the common goal of stimulating interest in research within the organisation (micro perspective). According to the second principle, the political climate should be reviewed as a basis for the implementation (macro perspective). The objective is to ensure a legislative policy where the aim and specific goal cannot be disregarded due to the priority of ordinary health care activities [177]. A key aspect of Matland's reasoning is the importance of relevance before volume, i.e. for an implementation to be successful, the holistic perspective should take priority over production volume [177, 179]. The support from top management for the implementation of R&D within Halland county council [180], was in

many respects in line with Matland's reasoning. The managerial support continued during the 12-year intervention period, and during the process, the organisation started to shift from a bureaucratic to a post bureaucratic structure. This heralds a new era where visions, values and strategies are developed in dialogue between management and staff [181]. It is a great challenge for public health authorities to initiate such a process and it will take time to complete it. Local R&D projects were highlighted in an effort to make management aware of the use and not only the cost of R&D. The channels were employed to keep politicians as well as management informed about developments, which led to dialogue as a first step towards the integration of research mindedness at policy level. Within primary care in Halland there has been a marked enhancement of R&D competence with some 300 employees obtaining a degree in research methodology corresponding to 15 or 30 ECTS⁴. In line with the skill enhancement efforts within primary care⁴, 15 doctoral students were enrolled during this period, 12 of whom have obtained a doctorate. From a practical perspective, projects have been implemented, something that improves the quality of the care provided. In addition, a number of R&D projects have been implemented, many of which have been reported in international journals as well as presented at national and international conferences [182]. All these excellent examples have served as models to highlight strategic communication. Focusing on work places and individual employees who are active in R&D is conducive to gradually changing the tradition within primary care and creating a positive view of R&D among politicians. This will make it easier for new students and staff members who start working in primary care, as they already have an evidence-based mode of thinking. Not only will these students be listened to when putting forward new thoughts and ideas that are likely to benefit the work place, but they will also have competent supervisors to guide them from the start, which is an advantage in local R&D work.

6.3.4 Strategic communication as a significant tool

Strategic communication, which has its roots in various disciplines, is a tool for enhancing motivation and changing attitudes [58]. A well prepared strategic plan from the outset is just as important as the many goal descriptions formulated. Follow-up and evaluation of the plan as well as resulting interventions is likely to be a factor that ensures success.

⁴ Official statistics; County Council of Halland, Sweden 2010.

At the start of the research for this thesis, only the traditional oral and written communication channels were available, but after a few years the digital channel including the website became established and accepted. The advantage of traditional media is greater credibility and that the message is received by many. Nevertheless, traditional media can be seen as a form of one-way communication in that it is difficult for the organisation to engage in a dialogue and know how the communication was assimilated by the recipients as there is little opportunity for feedback [153].

Seen in a wider perspective, it is likely that the content of the synergy effect between the communication channels will change considerably. The new wave of multivariation in communication is gradually erasing traditional boundaries. For example, social media facilitates interaction, dialogue and instant feedback as well as the opportunity to quickly obtain an overview of the surrounding world. Social media are usually employed as a complement to traditional ones. The new media developed by means of the Internet, for example blogs, lead to opportunities to combine different expressions that were previously only available in separate media forms [183]. As a result of this interactivity, the organisation can create new convergent forms of content and use. The strength of strategic communication is that it can be adapted to the surroundings, context and the various target groups' communication channel requirements. It can be assumed that, for this reason, health care organisations will change their communication channels over time and start to employ social media. It is therefore more important to start with the message rather than choice of channel. This does not concern communication by means of traditional or social media per se, but rather the selection of the most appropriate medium for the message in question and viewing the medium as a vehicle that must match the aim of the communication [184].

The strategic communication was continuously adjusted in order to increase the intention to engage in R&D in primary care. The implementation process consisted of various major domains, for example internal and external factors, characteristics of the individuals involved and the process itself, all of which are recommended in an implementation context [50]. Therefore, the thesis presents a feasible implementation model for promoting staff members' scientific interest by creating a positive attitude to R&D as part of an evidence-based culture, thus benefiting the patient over time (Figure 11).

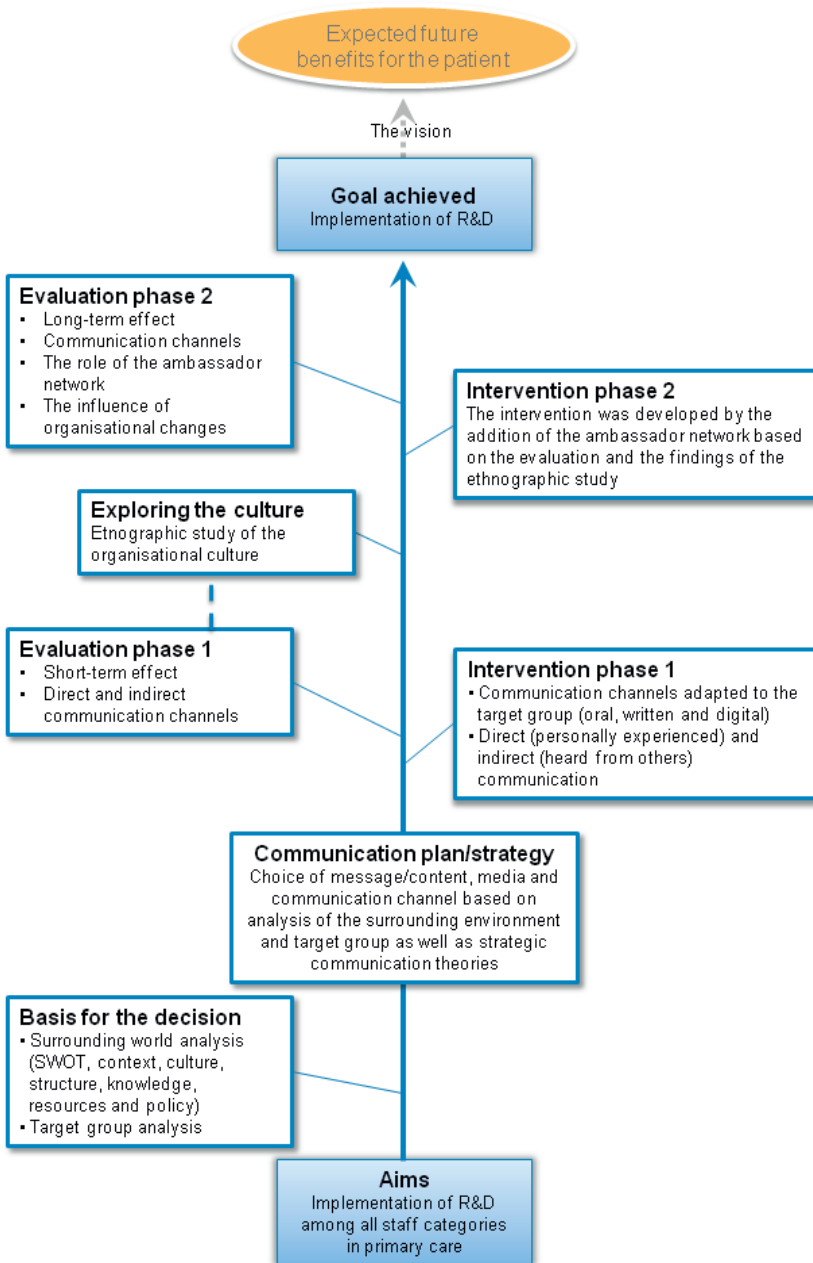


Figure 11. The model presented in the thesis for the planning, intervention, follow-up and evaluation of R&D implementation based on strategic communication among primary care staff over time.

7 CONCLUSION

Paper I: Strategic communication contributed to increased knowledge of and interest in R&D among primary care staff in all SEI groups. All communication channels played a significant role in this process.

Paper II: The intervention further developed a new way of thinking and willingness to change in relation to R&D in the organisation. An important factor in this development was the synergy effect among the communication channels.

Paper III: The organisational culture with its various levels was found to have a bearing on the two separate worlds of research and practice. The norms and values inherent in the invisible level were described as the most significant in terms of implementing R&D in the unit.

Paper IV: Strategic communication contributed to improvement over time in terms of new ways of thinking and willingness to change. There was a clear association between knowledge of the R&D Ambassador network and the development of new ways of thinking among primary care staff.

Comprehensive analysis: The vision of the implementation was realised in four steps, which together lead to the promotional platform for future implementation of research findings and EBP within primary care. The four steps follow a sequential principle:

1. *A culture prepared for change*, contributes to strengthening an organisation's readiness to change and prepares the organisational culture for the implementation process.
2. *Strategic approach*, the theory-driven strategic communication consisting of established communication channels and the inter-channel synergy effect includes all staff members and contributes to a holistic cultural view of R&D.
3. *Evidence*, the result was obtained from a long-term follow-up based on an intervention cohort that included 70% of all primary care staff in the region.

4. *Change*, the change in attitude was a gradual process that took place over time (12 years).

The systematic execution of the above steps means that all the findings can be considered new knowledge. To our knowledge, no previous study design included a long-term perspective of a primary care culture prepared for change by means of strategic communication influenced by a theoretical platform prior to the implementation of R&D.

8 FUTURE PERSPECTIVES

8.1 Practical perspectives

This thesis constitutes a valuable tool for the implementation of EBP as well as the creation of an intention to engage in R&D in primary care. The study draws attention to a number of important contextual and staff aspects for future innovative planning. Furthermore, intention to engage in R&D as a platform for change of attitude on the part of staff members plays an important role but requires a supportive leadership strategy. The use of ambassadors to build a bridge between science and practice is also a factor of importance for the creation of a new evidence-based culture throughout the context. In order to obtain a measurable result that is adapted to the target group, strategic communication in combination with expert advisers is an important tool in the intervention. The thesis can also be utilised for educational purposes as well as to influence opinions in order to facilitate the introduction of measures that promote a research tradition within primary care for the benefit of both patients and staff members over time.

8.2 Research perspectives

The thesis highlights the need for more research on how the role of the ambassador network in the integration of R&D in the health care context is shaped and utilised over time. More research is also required on the part played by leadership and policy in the implementation of an evidence-based mode of thinking in the organisation. From a research perspective, the study design and methodology can form a basis for discussion when planning future implementation platforms.

8.3 Organisational perspectives

The present results highlight the importance of the organisational culture for the intention of staff members to engage in research and adopt a new mode of thinking, both of which are an essential basis for future implementation of research findings and new methods. The creation of a culture that is prepared for change is also of value as collaboration between academia and industry will need to be strengthened over time. Prioritising R&D on the political agenda and allocating funds for this purpose legitimises a research culture within the primary care context, and constitutes a determined effort in the implementation of research mindedness in the organisation. A promotional

platform will be established if the interaction between organisational culture and structural conditions is good.

Author's afterword

The dissemination and communication of information may appear simple, but to those familiar with the communication process it is an art. To me it was a natural step to evaluate and ascertain whether the R&D message had been communicated in the correct manner and whether it achieved its intended effect. In fact, the focus of this thesis could have been the dissemination and implementation of any innovation, but the reason it concerns the intention to engage in R&D can be found in my background. For 25 years I have been part of the Swedish health care system and in combination with my master degree in communication science I became aware of the need for all employees to possess an evidence-based mode of thinking in order to provide the best possible patient care.

My aim with this thesis was therefore to describe, follow up and evaluate the implementation of R&D among primary care staff by means of strategic communication.

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APPENDIX

Questionnaire on the first occasion

1. Are you male or female?

- Man Woman

2. Year of birth? 19.....

3. Profession?

- Physician
 Nurse
 District nurse
 Midwife
 Assistant nurse
 Dentist
 Dental nurse (assistant)
 Dental hygienist
 Physiotherapist
 Occupational therapist
 Psychologist
 Medical secretary
 Administrative staff
 Other profession

4. Do you have a leadership position?

- Yes No

5. In which primary care region are you employed?

- Kungsbacka
 Varberg
 Falkenberg
 Hylte
 Halmstad
 Laholm

6. Do you work

- Full-time? Part-time?

Knowledge of and interest in Research and Development (R&D)

7. Do you have any knowledge of R&D in the primary care organisation?

- Have knowledge (if yes, please move to question 10)
- No knowledge (if you choose this alternative, please move to questions 8 and 9, before returning this questionnaire)

8. If you indicated “no knowledge”, what do you think is the reason?

- I have no knowledge of R&D in the primary care organisation
- Managers do not prioritise R&D
- Lack of time at our workplace for finding out more about R&D
- There is no need for R&D at our workplace

Other, please specify

9. Would you like to be informed about R&D in the future?

- Yes
- No

If yes, how?...

If no, please specify the reason...

Please return the questionnaire

10. How did you obtain knowledge about R&D?

- R&D unit, primary health care
- Other R&D units
- Manager
- Co-worker

Other, please specify...

11. How interested are you in R&D?

- Very interested
- Fairly interested
- Not interested

If you are not interested in R&D, please specify the reason and whether there is something that might interest you...

Please return the questionnaire if you are not interested in R&D

12. When did you start to become interested in R&D?

- I was interested before the county council started the R&D unit in 1997
- I became interested after the county council started the R&D unit in 1997

13. If you became interested after the county council started the R&D unit, please describe in which way

Through my own initiative (direct)

- Read a popular science report
- Read a copy of the R&D news bulletin
- Read an intranet web site
- Read an Internet web site
- Attended a scientific seminar
- Attended an annual research conference
- Participated in an R&D course

Heard about somebody who had described an R&D project (indirect)

- Read a popular science report
- Read a copy of the R&D news bulletin
- Read an intranet web site
- Read an Internet web site
- Attended a scientific seminar
- Attended an annual research conference
- Participated in an R&D course
- Was informed about R&D at management level

If none of the above, please specify

14. Has the R&D information in your organisation led to you

- | | | |
|---|------------------------------|-----------------------------|
| Developing a new way of thinking and ideas? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Requesting an R&D course? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Starting an R&D project? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| Changing or intending to change work practices? | <input type="checkbox"/> Yes | <input type="checkbox"/> No |

Other, specify.....

If you answered No to any of the above questions, what are the reasons?.....

15. Have you participated in an R&D course arranged by the primary health care organisation?

- Yes, scientific theory and method, 15 credits (first year)
- Yes, scientific theory and method, 30 credits (first year)
- Yes, public health science (first year)

If yes, would you like to continue and participate in more R&D courses?

- Yes
- No

16. Have you participated in any other R&D courses?

- Yes
- No

If yes, which...

17. If you did not participate in any course organised by the R&D unit, would you be interested in attending such a course in the next year/years?

- Yes
- No

18. Would you carry out an R&D project?

- Yes
- No
- Currently carrying out an R&D project and will start a new one
- Currently carrying out an R&D project and am satisfied with it
- Have finished an R&D project but will start a new one
- Have finished an R&D project and am satisfied with it

Scientific seminars

19. Have you attended any scientific seminar (lunch seminars in various municipalities)?

- Several times
- On one occasion
- Never (please move to question 23)

20. Have the scientific seminars made you interested in finding out more about R&D?

- Yes
- No

21. Did you have an opportunity to state your point of view at the scientific seminars?

- Yes
- No
- No point of view

If yes, please describe your point of view.....

If no, please describe the reason.....

22. If you stated your point of view, did you receive any feedback from the R&D unit?

- Yes
- No

Annual research conference

23. Have you attended an annual research conference arranged by an R&D unit in primary health care?

- Several times
- On one occasion
- Never (please move to question 27)

24. Did the research conference make you interested in finding out more about R&D?

- Yes
- No

25. Did you have an opportunity to state your point of view at the annual research conference?

- Yes
- No
- No point of view

If yes, please describe your point of view.....

If no, please describe the reason.....

26. If you stated your point of view, did you receive any feedback from the R&D unit?

- Yes
- No

R&D news bulletin

27. Have you seen the R&D news bulletin?

- Yes No (If 'No', please move to question 35)

28. Have you read a copy of the R&D news bulletin?

- Several times
 On one occasion
 Never (please move to question 35)

29. If you read the R&D news bulletin, in which way did you do so?

- Read the whole bulletin
 Read most of it
 Browsed through it

30. Did the R&D news bulletin make you interested in finding out more about R&D?

- Yes No

31. Did the description of the R&D project in the R&D news bulletin make you interested in finding out more about it?

- Yes No

32. Have the R&D projects presented in the R&D news bulletin made you interested in starting your own research?

- Yes No, as I already conduct research

33. Do you consider that you have had an opportunity to state your opinion about the R&D news bulletin?

- Yes No I have no opinion

If yes, please describe your opinion.....

If no, please describe the reason.....

34. If you stated your opinion about the R&D news bulletin, did you receive any feedback from the R&D unit?

- Yes No

R&D unit intranet web site

35. How often do you visit the R&D unit intranet web site?

- Daily or almost daily
 Every week
 Every month
 Less than once a month
 Never (please move to question 38)

36. Did you find the R&D information you searched for on the intranet?

- Yes No

37. Did your intranet visit make you interested in finding out more about R&D?

- Yes No

R&D unit Internet web site

38. How often do you visit the R&D unit Internet web site?

- Daily or almost daily
 Every week
 Every month
 Less than once a month
 Never (please move to question 38)

39. Did you find the R&D information you searched for on the Internet?

- Yes No

40. Did your Internet visit make you interested in finding out more about R&D?

- Yes No

41. Do you consider that you had an opportunity to state your opinion of the R&D unit web sites?

- Yes No I had no opinion

If yes, please describe your opinion

If no, please describe the reason.....

42. If you stated an opinion about the R&D web sites, did you receive any feedback from the R&D unit?

- Yes No

43. In which form do you prefer information from the R&D unit?

- Scientific seminars
- Annual research conference
- R&D news Bulletin
- Web site (intranet)
- Web site (Internet)
- Other, please specify.....

Please add any comments you might have on how R&D information could be improved....

Please return the questionnaire in the enclosed addressed envelope.

The questionnaire in this appendix is a translation of the original Swedish questionnaire.

