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Information and Knowledge Processes in Health Care Value Co-Creation and Co-Destruction

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Abstract

The purpose of this article is to explore how information and knowledge processes (IKPs) influence co-creation and co-destruction of value in a health service system. A qualitative, single embedded case-approach is taken to develop theory through a systematic combining of theoretical framework, empirical fieldwork, and case analysis. Six theoretical propositions are set to describe the linkage between IKPs and value co-creation (and co-destruction). The article contributes to health marketing and transformative service research by linking organizational activities to the motivation and empowerment of patients and their families, by highlighting the importance of the role of knowledge integration in value co-creation, by introducing a shift toward systems thinking, by conceptualizing value as manifested as health behavior change, and by underlining that health care processes may have a negative (value co-destructing) influence on the well-being of actors.

Keywords

value co-creation, health service, knowledge management, transformative service, value co-destruction

Introduction

Health care does not always achieve its goals: better health and well-being. Several diseases, such as type II diabetes, cardiovascular problems, and some cancers are related to people's lifestyle. The main care of these diseases is health counseling aiming at improved health behavior. However, resources can be wasted by, for example, giving nutritional information to people who are not willing to change their health behavior. Health marketing (Crié & Chebat, 2013) and transformative service research (TSR; Anderson et al., 2013) have recently tackled challenges in health care. While providing interesting insight into the increasingly active role of patients in value co-creation in health care (McColl-Kennedy et al., 2017), health marketing and TSR studies have not paid much attention to the organizational perspective (Rosenbaum et al., 2011).

We argue that it is necessary to understand the role of health care professionals and institutional practices in the value co-creation process. Health care intervention does not necessarily result in improvements in the patient well-being but can also decline it; this phenomenon is known as value co-destruction (Echeverri & Skålén, 2011; Plé & Cáceres, 2010). In this study, patients' value co-creation and co-destruction are manifested as positive and negative health behavior changes.

While information asymmetries and cognitive gaps between health care professionals and patients are widely recognized, Palumbo (2016) notes that it is still unclear how these factors inhibit value co-creation. We conduct the requested empirical study to fill this gap.

The goal of our research is to find out how information and knowledge processes (IKPs) influence co-creation and co-destruction of value in a health service system. In particular, we delineate the elements of IKPs that affect dynamic value co-creation configuration of resources in a health care context.

IKPs refer to *organizational processes that ensure the availability of information and knowledge for actors within an organization and for its stakeholders through four elements: information collection, information transfer and storage, knowledge sharing and creation, and information and knowledge use*. Health service system is, in turn, defined as *a dynamic value co-creation configuration of resources, including people, organizations, shared information (language, laws, measures, methods), and technology, all connected internally and externally to other service systems by value propositions that aim at improvement of a state of*

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complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

We study our research question in the context of childhood obesity care. Obesity in childhood can be a risk factor for severe diseases in adulthood (Park, Falconer, Viner, & Kinra, 2012). Although obesity is largely preventable, approximately 40 million children below the age of 5 years are overweight or obese (World Health Organization [WHO], 2016). It is not always easy to adhere to health professionals' recommendations to limit energy intake, to increase the consumption of fruit and vegetables, or to engage in physical activity. Therefore, obesity care stresses the importance of health counseling in health behavior change. But, it is not only patients that do not follow recommendations. Cabana et al. (1999) identified nearly 300 barriers to why physicians do not adhere to clinical practice guidelines. To shed light on the mismatch between advice and adherence—both physician–patient and guidelines–physician—we focus on the role of IKPs in health care value co-creation.

We take a closer look at the phenomenon through a research setting in multiprofessional integrated care pathways (ICPs) of childhood obesity in Finnish public health care. Our abductive study builds on a novel multidisciplinary approach with a theoretical focus on three fields: We combine literature on value co-creation in health care with theories of health behavior change and knowledge management.

We contribute to health marketing and TSR by linking organizational activities to the motivation and empowerment of patients and their families, by highlighting the importance of the role of knowledge integration in value co-creation, by introducing a shift toward systems thinking, by conceptualizing value as manifested as health behavior change, and by underlining that health care processes may have a negative (value co-destructing) influence on the well-being of actors.

The research carries important implications for health care organizations. We question the current practices in health care and call for the development of IKPs that take into account the specific needs of patients and their families.

Theoretical Background

Value Co-Creation in Health Care

Health marketing and TSR can be seen as an alternative to the traditional biomedical model of health care. Rather than focusing on illnesses, health marketing and TSR pay attention to the active role of a patient in co-creation of value (Palumbo, 2016)—multi-actor integration of resources (Vargo & Lusch, 2008)—in collaboration with the physician and the health care organization (Gill, White, & Cameron, 2011; Osei-Frimpong, Wilson, & Owusu-Frimpong, 2015; Zolkiewski, 2011). In fact, owing to the nature of health care, the involvement of the patient in value co-creation is unquestionable (Palumbo, 2016).

Value co-creation directs our attention to the importance of context, or "value-in-context" (Vargo, Maglio, & Akaka, 2008) that emphasizes the importance of time and place dimensions and network relationships of service (eco)systems in the creation and determination of value. In micro, meso, and macro levels of context (Chandler & Vargo, 2011), there are, for example, situational, socio-technological, or cultural and historic contexts that impact value co-creation (Akaka & Parry, 2018). Importantly, value-in-context—"an improvement in system well-being" (Vargo et al., 2008, p. 149)—can be determined with a macro-view as well as through phenomenological experience in the micro-level (Akaka & Parry, 2018). Thus, it is necessary to understand how patients have different needs and how their access to resources in a service system varies in contexts.

A patient's service system is an essential value-configuration space that actors' interactions shape and in which value co-creation occurs (Edvardsson, Tronvoll, & Gruber, 2011). For example, Loane, Webster, and D'Alessandro (2015) and Zhao, Wang, and Fan (2015) highlight the importance of online health communities on providing health information and social support. These communities may enable knowledge sharing between patients. As Gummesson and Mele (2010, p. 193) note "knowledge is not solely produced by a single actor within its practices but by a network of actors committed to co-create value." This requires sharing redundant information to facilitate the transfer of tacit knowledge. On the other hand, Van Oerle, Mahr, Lievens, Oerle, and Van Mahr (2016) and Frow, McColl-Kennedy, and Payne (2014) warn that in addition to positive impact, the health outcomes of knowledge sharing may even be adverse when inaccurate information is shared. For example, while online forums may provide meal ideas and inspiration for health behavior change, there is also misleading commercial and peer-facilitated content that confuses pediatric obesity patients (Holmberg, Berg, Dahlgren, Lissner, & Chaplin, 2018).

The importance of context, multiple stakeholders, and information in value co-creation shift our focus from dyadic interactions between a health professional and a patient to wider health service systems. Maglio and Spohrer (2008, p. 18) define service systems as "value-co-creation configurations of people, technology, value propositions connecting internal and external service systems, and shared information (e.g., language, laws, measures, and methods)." We conceptualize this kind of a configuration as a "health service system" when the aim of the service system is to improve health, which is in turn defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (Grad, 1946). Thus, our novel conceptualization of health service system, which builds on well-known definitions of service system and health, enables studying how configurations of four categories of resources—people, technology, value propositions, and shared information—influence health promotion.

While multiple actors play a role in designing and implementing a health service system (Zinkhan & Balazs, 2004), Fyrberg Yngfalk (2013) presents that these actors may have different views on the process, and some interactions may be contradictory to value co-creation, leading to "value co-destruction" (Echeverri & Skålén, 2011). Patients may, for example, be reluctant to participate in value co-creation process (Spanjol et al., 2015). Sometimes, that is due to lack of information or wrong type of information available (Olsson, 2014). To co-create value, patients need to make behavioral and cognitive contributions (Zainuddin, Tam, & McCosker, 2016). Therefore, patients need to have the knowledge, skills, and motivation to co-create value. When the health care organization's knowledge is poorly communicated and the knowledge resources of the patients and their family are inadequate, there is a high risk for ineffective collaboration, resulting in value co-destruction (Frow et al., 2014).

Patients must be motivated, capable, and know their role as co-creators of value (Dellande, Gilly, & Graham, 2004; Merz, Czerwinski, & Merz, 2013). Black and Gallan (2015) propose that a closer interaction between patients and health care organizations in accessing information from each other improves the engagement of an actor network in value co-creation. Patients, who are taught why they have to perform certain health-promoting tasks, have higher levels of motivation to perform these tasks effectively (Damali, Miller, Fredendall, Moore, & Dye, 2016). Merz et al. (2013) propose that patients' willingness and ability to participate in value co-creation are dependent on the type of disease, the treatment options, and the received consultation. In the best case, these pieces fall together and patients co-create value (McColl-Kennedy, Vargo, Dagger, Sweeney, & Kasteren, 2012).

Based on prior literature, it is necessary to understand more thoroughly the willingness and capability of patients to co-create value, that is, change health behavior: and how health care organizations can support patients in lifestyle changes. Therefore, we take a closer look at the stage theories of health behavior change and IKPs.

Stage Theories of Health Behavior Change

WHO (1998, p. 8) defines health behavior as "any activity undertaken by an individual, regardless of actual or perceived health status, for the purpose of promoting, protecting or maintaining health, whether or not such behavior is objectively effective toward that end." This definition entails also health behavior which is characterized by negative implications (value co-destruction). Although this definition by WHO excludes behaviors which may be adopted regardless of consequences of health, we consider that it is useful in conceptualizing health behavior change. We consider that any changes to the lifestyle practices, positive or negative, are considered as health behavior change. To clarify, health behavior change is different from switching behavior that refers to "the decision that a consumer makes to stop using a particular service or service provider and switch to an alternative" (McClymont, Gow, Hume, & Perry, 2015, p. 593).

Over the past decades, scholars have introduced different stage theories of health behavior change, such as transtheoretical model (Prochaska & Velicer, 1997), the precaution adoption process model (Weinstein, 1988), the integrated change model (Vries, De Mesters, Steeg, & Van De Honing, 2005), and the health action process approach model (Lippke, Ziegelmann, & Schwarzer, 2005). Although these theories define the stages of health behavior differently and disagree on how to facilitate stage transition, they agree on two critical transitions, namely (a) from "preintention" stage to "intention" stage and (b) from "intention" stage to "action" stage (Schüz, Sniehotta, Mallach, Wiedemann, & Schwarzer, 2009).

In the "preintention" stage, a person has not decided to change health behavior. In the "intention" stage, a person has decided to change behavior but has not yet taken the required actions. In the "action" stage, a person has changed health behavior in line with the intentions (Schüz et al., 2009). It is worth noting that there is a substantial gap between intention and action, as on average only a half of the people in the intention stage (e.g., intends to start using a condom or intends to go to cancer screening) proceeds to the action stage (Sheeran, 2002).

The type and properties of intention and behavior, as well as personality and cognitive variables, can all partly explain this intention–behavior gap (Sheeran, 2002). We approach the transitions from a cognitive perspective by arguing that the relevance of information changes as a patient shifts from one stage to another. For example, a patient may not have an intention to change behavior due to the lack of information on health risks. In case a patient already intends to change behavior, there is not necessarily a need for additional information regarding the risks but on how to translate the goal into action (Lippke et al., 2005). Thus, stage theories of health behavior explain the need for patient education and training in health care (Damali et al., 2016). But in contrast to Damali et al. (2016), empowerment is not only about education on role clarity (awareness of the required activities) but ". . . a social process of recognizing, promoting, and enhancing people's abilities to meet their own needs, solve their own problems and mobilize the necessary resources in order to control their lives" (Gibson, 1991, p. 359).

As the patient proceeds from one stage to another, health behavior changes and the person's viability is improved. Thus, we consider advances in health behavior changes as value co-creation. On the other hand, if health behavior changes from action to intention or from intention to preintention, we consider that behavior is declining a system's well-being, and value is co-destructed.

As patients are not the only actors who partake in value co-creation, it is necessary to understand the role of other actors in facilitating health behavior change. In a micro-level,

health service system consists of patients and health professionals. In meso- and macro-level these can be extended to health care organizations and patients' families and communities, as well as insurance companies and government authorities (Saviano, Bassano, & Calabrese, 2010). Although it might be interesting to study the role of wider health service system in health behavior change, in this study, we focus on the role of health care organizations, and particularly their IKPs, to understand how the knowledge of health care organizations becomes available to support patients' value co-creation, that is, to change their health behavior.

IKPs

IKPs largely determine how health care organizations can support value co-creation. Information is an extraction from data that are potentially useful for an agent's knowledge base (Boisot & Canals, 2004). Here, information refers to explicit documents or messages that may be transferred through some media or in human interaction. Knowledge, in turn, is a mental process in an individual's mind including the aspects of understanding and learning. In practice, these two concepts are interlinked as knowledge is based on information and experiences, and therefore both information and knowledge need to flow within an organization to ensure value co-creation in health care (Myllärniemi, Laihonen, Karppinen, & Seppänen, 2012). As a result, it is important to ensure that information systems support the provision of service within a health care organization (Frow et al., 2014; Myllärniemi et al., 2012), as well as between actors that facilitate value co-creation in a health service system (Chakraborty & Dobrzykowski, 2014; Frow et al., 2014).

Synthesizing knowledge management literature in health care (Berg, 2004; de Lusignan, Wells, Hague, & Thiru, 2003; French et al., 2009; Lau, 2004; Nicolini, Powell, Conville, & Martinez-Solano, 2008; Orzano, McInerney, Schraf, Tallia, & Crabtree, 2008), we consider that IKPs consist of four essential elements: (a) information collection, (b) information transfer and storage, (c) knowledge sharing and creation, and (d) information and knowledge use. These processes take place both in electronic information networks and in personal interactions among health professionals and patients and their families.

Information collection. Treatment of patients requires care decisions based on information that is collected from various sources, such as laboratory results and referrals. Current information about the patient may be acquired in interaction through direct questions or anamnesis questionnaires. Furthermore, medical and organizational information is acquired from multiple sources such as databases, professional literature, colleagues, and so on.

Information transfer and storage. Patient information in health care is mediated through information technology (IT) in electronic patient records (EPRs) and through secure interfaces in referrals and care feedbacks. EPRs enable easy storage and retrieval of patient information (Berg, 2004). Typically, EPRs are designed to be used by clinicians and administrators (Winkelman & Leonard, 2004), which affects the use of records as well as the data collection. Organizational information about practices and regulations is transferred through e-mail, intranet, and extranet. In some cases, printed documents must be used. This part of the process is important, as the integration of information is necessary for knowledge creation and sharing (Orzano, McInerney, Tallia, Scharf, & Crabtree, 2008).

Knowledge creation and sharing. Knowledge is created, when people commit to ideas, experiments, and fellow human beings (Nonaka & Konno, 1998). According to Lau (2004), knowledge production includes the creation of knowledge through the collection of experience, the generation of new understanding by combining research into a particular health setting, the synthesis of research findings, and identification of experts who could share their tacit knowledge. Knowledge sharing is an activity in which people make knowledge available to another or others. It can result in the construction of common meanings and the creation of new knowledge: that is learning. For example, organizational learning could be enhanced in health care by shifting from strictly evidence-based medicine to a broader approach which supports sharing of professionals' knowledge, expertise, and experiences (de Lusignan et al., 2003). On the other hand, Nicolini et al. (2008) argue that communities of practice and informal networks can be both enablers and barriers to knowledge management in health care. Besides lack of time to share knowledge, culture, professionalization, leadership, lack of rewards and recognition systems, hierarchical organization structure, and distributed IT systems are barriers to the success of knowledge management practices (Nicolini et al., 2008).

Information and knowledge use. In health care, information and knowledge use intertwines with knowledge creation and sharing (Yamazaki & Umemoto, 2010). According to Dalkir (2011), knowledge use includes the aspects of the distribution of knowledge to targeted audiences, sharing of knowledge in interpersonal reciprocal communication and application of knowledge in work tasks or routines. Straus, Tetroe, and Graham (2011) call this kind of knowledge use as knowledge translation. Although knowledge translation refers to meaningful and purposive actions of knowledge use in practice and decision-making by various actors in a health service system with expected positive organizational and patient outcomes, positive results are not self-evident. For example, Straus et al. (2011) found failures to use research evidence in decision-making across various actor segments. Particularly, they highlight the lack of integrated health information systems and targeting multiple actors as barriers

to translating knowledge to positive health outcomes. In addition to knowledge translation, knowledge utilization refers to the use of knowledge to improve nursing practice. Compared with knowledge translation, knowledge utilization shifts the focus from research-based evidence to the application of various kinds of knowledge, including empirics, aesthetics, personal knowledge, and ethics (Edgar et al., 2006).

Based on prior literature, we understand that knowledge and skills are important resources in value co-creation. Knowledge can be seen as an *operant* resource—capable of creating value—that acts upon information as *operand* resource—requiring some action to make it valuable (Maglio, Vargo, Caswell, & Spohrer, 2009; Wieland, Polese, Vargo, & Lusch, 2012). Yet, we still lack understanding of how the integration of information and knowledge resources influences value co-creation in health care. On one hand, we know that health-promoting conversations with families can be employed to enhance family health (Benzein, Hagberg, & Saveman, 2008). On the other hand, there is still a need for studies to understand organizational efforts to bridge the cognitive gaps between the patients and the health care professionals to ensure engagement of patients (Palumbo, 2016). As highlighted in the stage theories of health behavior change, when an individual is trying to achieve long-term health behavior changes, information needs to be internalized and turned into action. Therefore, proper information and knowledge are essential for health behavior changes, and it is assumed that the improvement of health care organizations' IKPs can support value co-creation process in health care (Nordgren, 2009). As we lack studies linking IKPs with value co-creation (manifested as health behavior change), it is necessary to explore the connection between these processes.

Research Design

Research Approach and Case Description

A case study approach is best suited for exploratory research aimed at finding explanations for a phenomenon requiring a holistic perspective on the context (Sinkovics, Penz, & Ghauri, 2008; Yin, 2009). Out of different case study approaches (Yin, 2009), we selected an embedded single case study, as it provides a single setting for studying multiple cases and enables an abductive, systematic combining of a simultaneously evolving theoretical framework, empirical fieldwork, and case analysis for theory development (Dubois & Gadde, 2002).

This qualitative case study involves the ICPs of two Finnish University Hospital districts, which represent embedded units of analysis (UA). In Finland, municipalities are obliged to guarantee adequate primary and special health care and health promotion for every inhabitant. Primary health care focuses on prevention, early diagnosis, and treatment, but severely obese children are referred to special health care. An ICP is a guideline for structured forms of activities between primary and special health care. It aims at enhancing multiprofessional collaboration and efficient treatment of the patients in both primary and special health care.

Data Collection and Analysis

The empirical data, collected between 2009 and 2012, consist semi-structured interviews of 30 health professionals in primary (18) and special (12) health care, and of three children and their mothers, a family questionnaire ($N = 13$), and health care organizations' care path instructions. The professionals had on average more than 20 years of work experience of which nearly 12 years in the current position or in similar tasks (Appendix A). We do not mention their professions to maintain the anonymity of the interviewees.

We interviewed all professional groups in the weight clinic (UA1 and UA2) in special health care. In primary health care, four public health nurses, a clinical nutritionist, and a pediatrician agreed to be interviewed in UA1. In UA2, we conducted interviews in three municipalities. We interviewed 10 public health nurses working in child welfare clinics and schools, and two doctors. Overall, the themes were the same in both UA but individual questions in the interview guides were formulated slightly differently for primary and special health care (Appendix B and C).

We interviewed children (9- to 12-year-olds) and their mothers in UA1. The recruitment of interviewees by nurses at the outpatient clinic proved to be so challenging that the final number of interviews was three. The children's interviews lasted only a few minutes and their duration is not marked separately in Appendix D. The interview guides for parent and patient interviews are available in Appendix E and F. Due to difficulties in recruiting family interviews in UA1, we decided to collect data with family questionnaires in UA2. A nurse gave the questionnaires to the families during their visits to the weight clinic between August 2011 and June 2012. The total number of questionnaires given was 40, of which 13 were returned (Appendix G). The number of referrals to the clinic varies yearly from 30 to 40. Thus, although the number of returned questionnaires ($N = 13$) is rather small, it represents about one third of the "weight path" families for 1 year. Due to the small N, we eventually decided to use only the open-ended qualitative questions in our data analysis. The questionnaire is available in Appendix H.

Before analyzing the data, we transcribed and translated the interviews. The interviews lasted from 18 to 60 min which resulted in approximately 20 hr of audio data in total. The total number of transcribed pages was 261.

We employed inductive qualitative content analysis (Strauss & Corbin, 1990) and an abductive logic (Dubois & Gadde, 2002) to analyze the data, which allowed us to go

Table 1. Coding Process.

Stage and focus area of the coding process	Main categories	Sample codes
First round: patient value	Benefits, costs or sacrifices	Health and disease prevention, problems with health, ability to function and emotional issues, the difficulties to make changes, the emotional sensitivity of interfering with eating and obesity, difficulties with interfering in the child's eating, other duties of the family, lack of time
Second round: IKPs	Information collection, information transfer and storage, knowledge creation and sharing, information and knowledge use	EPRs, documents, personal interaction, multiprofessional collaboration, reliable health information, personal health guidance, concrete tips, feeling safety (continuity of care), ICP development, learning of the organization, new organizational structure
Third round: health behavior changes	Motivation and empowerment	motivation, encouragement, support

Note. IKPs = information and knowledge processes; EPRs = electronic patient records; ICP = integrated care pathway.

back and forth between the multiple data, analytical framework, and the literature. The analysis of the embedded units was performed separately at first and then the findings of the two units were combined. Altogether, the data were coded in three stages (Table 1). First, the initial framework for coding focused on patient benefits and costs by one of the authors. The results were discussed with another author to ensure a consensus of interpretation of the qualitative analysis (Patton, 2002). That time, we identified the potential role of IKPs in explaining some of the successes and shortcomings of the results, or what we labeled as value co-creation and value co-destruction, respectively. Second, to understand the role of associated IKPs in explaining what we had witnessed, we engaged in open coding (Strauss & Corbin, 1990). Similar and consistent utterances were divided into subcategories and combined into main categories (axial coding), matching the research problems. Based on our synthesizing of knowledge management literature in health care (Berg, 2004; de Lusignan et al., 2003; French et al., 2009; Lau, 2004; Nicolini et al., 2008; Orzano, McInerney, Schraf, et al., 2008), these categories were (a) information collection, (b) information transfer and storage, (c) knowledge creation and sharing, and (d) information and knowledge use. We noticed that the coded material within these categories referred indirectly to both value co-creation and value co-destruction. But instead of just referring to benefits and costs as we identified in the first round of coding, we decided to code the patient data one more time based on health behavior changes. Therefore, third, we coded the answers in family interviews that referred to motivation or empowerment (both supporting and hindering health behavior changes). As a result, we were able to see the linkage between the literature—value co-creation (and co-destruction), IKPs, and the stages of health behavior change. Eventually, stage theories of health behavior change enabled us to understand how IKPs influence value co-creation and co-destruction in health service systems. In the end, we linked the organizational practices with changes in health behavior to see how organizational practices support and hinder motivation and empowerment of patients and their families.

While coding the data, we marked the quotations with letters and numbers. The code UA1 refers to the first unit of analysis and UA2 to the second unit. *Sp* refers to special health care and *Pr* to primary health care. *M* refers to mother and children interviewed in UA1. Quotations from the open-ended questions from UA2 are marked *F*.

We conducted the research according to the Finnish law and decree of medical research. Medical directors permitted us to conduct interviews with health care professionals. The ethical committee of the first university hospital district granted permission for the patient interviews in UA1 and for the questionnaire in UA2. The World Medical Association Declaration of Helsinki (World Medical Association, 2001) requires that subjects are protected from any discomfort and harm that may be psychological, emotional or economic. This research involved a minimal risk for the subjects that participated in the interviews, and we present the findings so that they cannot be used against the respondents' interests.

Findings

Collecting Information

In patient care, besides medical and organizational information and knowledge, health care professionals must be familiar with the previous medical history of the patient and also be aware of the family's medical history to evaluate risks and hereditary tendencies for medical problems. National and organizations' own care path instructions focus mostly on the medical information, which results in the collection of measurements, health status, family health history, and laboratory tests.

The basis of actions and procedures is evidence-based medicine. Biomedical medicine relies on objective

measurements, and this trend can be identified in the interviews of health care professionals:

> *According to the instructions the children should be measured every year. If you do not have time to do anything else, weight and height must be taken*. (UA2Pr2)

The care path instructions determine the measurements and laboratory tests which should be made for children with overweight or obesity problems. Patient information can also be collected from the patients by questionnaires which the patients and their families fill in. Health care professionals ask direct questions or discuss issues concerning lifestyle with the patient and the family at the appointment.

Current information about the patient is collected in the interaction between the family and the health care professionals. In UA2, lifestyle conversation and counseling are based on a printed questionnaire which the family fills in concerning nutrition and exercise. This information mediates the family's knowledge of the frequency of meals, quality of nutrition, and exercise habits.

Factual encoded medical information is relevant, especially for the doctors. Those professionals who take up more with counseling (e.g., nurses and clinical nutritionists) would like to receive more description about the counseling and efforts which already have been made to manage weight in primary health care:

> *The doctor's text is sometimes extremely clinical. There can be that "the liver is in the lateral line" but there is missing something like "there has been a quarrelsome divorce last year and then this and that happened."* (UA1Sp2)

Transferring and Storing Information

Patient information is available in the EPRs, in referrals to special health care, and in the epicrises (care feedbacks) to primary health care. The referrals and epicrises are the main contacts between the organizations. Transfer of explicit knowledge inside health care organizations is easy through IT. However, computers only allow transfer of simple codified messages or structured data entries.

Turning the knowledge explicit and available to all requires time. Inaccurate or lacking notes and instructions can cause information gaps and hinder other professionals' work. Information gaps, in turn, cause the insufficient creation of collective knowledge.

The public health nurses seldom have any direct contacts with special health care. In primary health care, the doctors manage the electronic referrals to and from special health care:

> *Well, the public health nurse does not write the referral to special healthcare. It is always the doctor who does it. And then when the epicrisis comes, it comes to the health records of the child and the doctor receives a message that the epicrisis has arrived but we public health nurses do not receive any messages.* (UA2Pr1)

In general, the doctor's referral does not support the transfer of information from primary health care to special health care. There are also problems in the information systems that create barriers to knowledge sharing and creation in communication between health service professionals. Moreover, each municipal health care center which belongs to the regional ICP is a separate actor in the health service system. In primary health care, the EPRs do not communicate between different municipalities. When the family moves from one municipality to another, the health records must be printed and mailed to the new health care center. In addition, the transfer of patient documents requires the permission of the patient based on Finnish law.

Because of these limitations in information transfer, families are sometimes expected to act as messengers between primary and special health care. But there are challenges as oral information is always interpreted, easily forgotten and thus difficult to transfer. Factual information about weight and other measurements is transferred, but other types of information are often missing.

Referrals and care feedbacks or epicrises between primary and special health care are transferred through secure interfaces. However, the form of storing information also influences the data entries of the professionals. As the entries are permanent, they can even influence other professionals' attitudes toward the patient.

Some health care professionals in special health care wished for more information about counseling in primary health care. It is not always clear, what kind of care is needed in special health care. The epicrises of special health care give recommendations for further follow-ups in primary health care on what has been examined in the special health care and how to proceed with the care plan. However, the epicrises contain mostly insufficient information to continue the care of the child in primary health care:

> *. . . I think that the child is transferred to primary healthcare with light instructions. The emphasis is on the follow-ups and measurements and I think that the living habits of the family do not change by constant weighing. We often think here that weighing does not lose weight; it comes down to totally different things.* (UA2Pr5)

Typically, there is no information about the motivation of the family (partly because it may influence the next professional's attitude). Furthermore, some professionals in special health care do not yearn for additional information from primary health care; they rely on their own and the organization's expertise.

Sharing and Creating Knowledge

Sharing of knowledge in health counseling requires personal interaction. Professional's pragmatic knowing is based on education and work experiences and skills develop gradually

in the course of the work and also through private life experiences. Sharing of emotional work experiences in counseling supports the professionals' competence to encounter the patients' and families' feelings and to deal with them.

However, employees rarely have occasions to knowledge sharing because of busy schedules:

> *We do not have time to discuss work issues with colleagues. We hardly meet, maybe say "good morning" and "bye bye" when we leave. All this common planning, developing and these kinds of things—we are not able to do them.* (UA2Pr6)

At best, professionals share and create knowledge about the family's nutrition and exercise and the family's cultural issues: What kind of food is preferred? Does the family or child have hobbies which include exercise or are the hobbies sedentary? Although this information is often available, it is rarely shared within the organization or between organizations. Problem is that different professionals meet the patient mostly separately and thus every professional hears a slightly different patient narrative and constructs the conception of the patient and his or her problem from their own professional point of view. These different conceptions may even lead to conflicts in collaborative care.

Using Information and Knowledge

In case information and knowledge are available, health care professionals consider that there is often too much information in EPRs to use it effectively. Doctors tend to focus on medical information only and provide guidance that aims toward follow-ups and measurements rather than helping families in lifestyle changes:

> *Sometimes when I read the doctor's texts I think how he has been able to make the status and ask for the anamnesis of the family and to give instructions in twenty minutes. The child has been severely obese for ten years and the instructions are that "daily exercise is recommended and eating of treats should be minimized." Yes, that is the solution!* (UA2Sp2)

Medicalization of obesity has led to the dominance of biomedicine in weight management. However, the problem is more complicated. Especially medical doctors bring up the fact that the treatment of childhood obesity is not very effective. Sometimes, families are not willing to receive counseling, whereas successful counseling changes the family's norms, attitudes, and beliefs.

From the perspective of health care professionals, the main challenges for lifestyle counseling appear to be the sensitive nature of obesity and the children's and families' lack of motivation to undertake lifestyle changes. Some families perceive lifestyle and eating habit as private issues, and they do not understand why health professionals try to interfere. Issues of overweight and obesity raise strong emotions which can appear as a child's or a parent's resistance to change. Especially if the parents also have weight problems, it can be challenging to bring up the issues of weight management.

If the family does not find that the child is overweight or obese, lifestyle guidance is not perceived relevant but patronizing and irritating. Therefore, the health care professionals feel powerless. All 18 primary health practitioners (14 public health nurses, 3 doctors, and 1 clinical nutritionist) had encountered resistance from parents when interfering with a child's overweight. Nevertheless, there are also parents whose attitudes toward health professionals' interference are more neutral or even positive, but they often find it difficult to motivate the children:

> *When the mother remarked about the eating habits it led to resistance. The child eats the treats, snacks, and chips in secrecy and the wrappers are found here and there. The mother stopped remarking when she saw how difficult the child's situation was and because the reaction was the opposite.* (F7)

Even if parents are motivated to change health behavior, they are often incapable to actively participate in practices that would be required for positive health outcomes for their children. Parents often have enough information to understand that lifestyle changes are necessary. However, the type of information and knowledge that is provided to the patients and their families is not empowering the families enough.

The families with an obese child wish for concrete instructions how to talk about the issue and how to empower the child. Families need pragmatic instructions how to prepare healthier meals and how to cope with challenging situations at home. However, counseling is not typically tailored to the needs of the families, and patients and their families are left frustrated. The findings indicate that every family has its own challenges in weight management. For some families, the challenges are with nutrition:

> *. . . he does not like all foods. Some salads and root vegetables—he does not want to eat them. So that we have not been able to realize all the instructions because I cannot get him to eat them.* (UA1M1)

Moreover, restricting one child's portion sizes and denying extra portions is a challenge. For other families, adding exercise to everyday life is difficult:

> *It depends on [child's name] also, I cannot make him exercise by force.* (UA1M2)

Families also find it difficult to restrict the child's or adolescent's television or computer time. This also indicates that it is not enough to intend to change health behavior. It requires actions from the wider health service system.

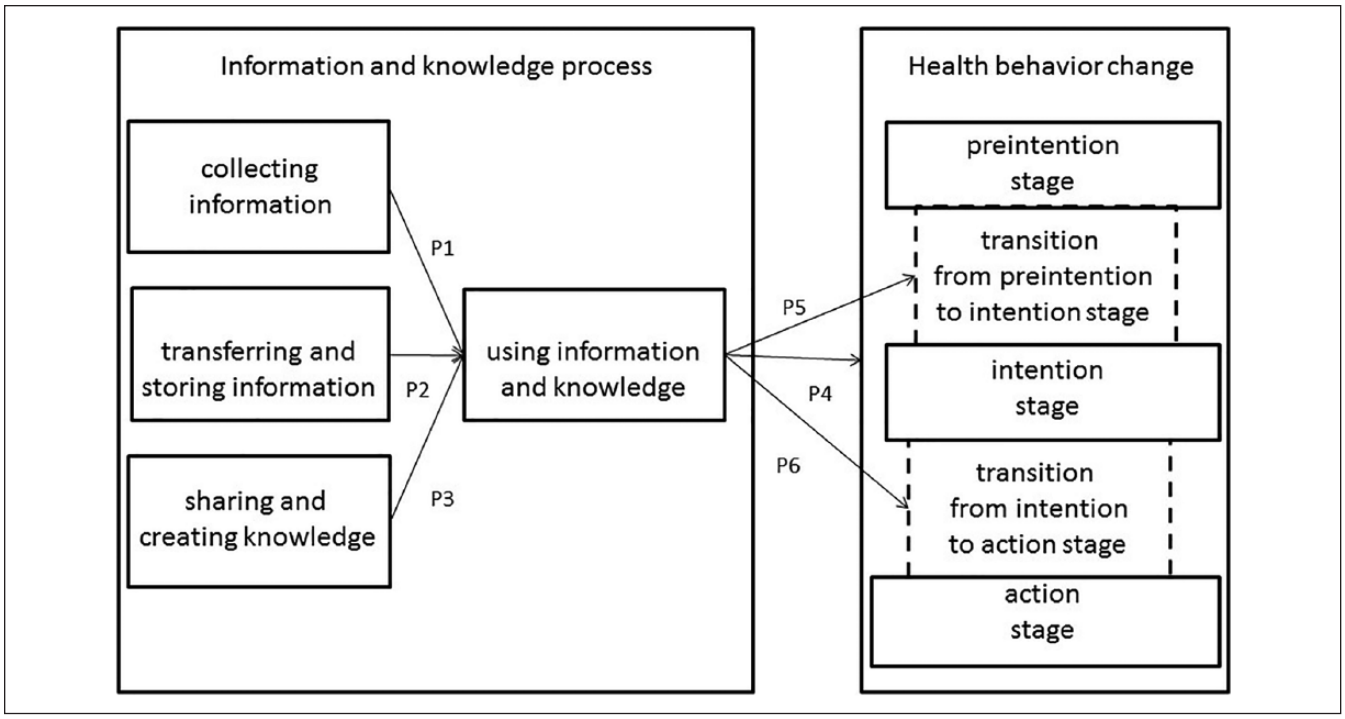

Figure 1. Proposed model on the influence of IKPs on value co-creation and co-destruction in public health care.
Note. IKPs = information and knowledge processes.

Implications, Limitations, and Future Research

Theoretical Implications

The study aimed at increasing our understanding of how the IKPs influence co-creation and co-destruction of value in a health service system. As information is often collected by other people than professionals who eventually need information and knowledge in supporting lifestyle changes, the collected information can influence the use of information and knowledge. Patients and their families feel that mediated information is not enough, but they need more pragmatic knowledge how to undertake lifestyle changes. In our study, those professionals who take up more with counseling do not know what kind of advice has already been given, and they would like to receive more descriptions about the counseling, used methods and efforts which already have been made. Furthermore, the boundary between primary and special health care appears to be strong which hinders knowledge sharing and creation of knowledge. As a result, many professionals are concerned about possible contradictions or overlap in counseling. We also found that transitions of health behavior change are not an individual but a multi-actor construct. A child can have two parents who live in different places, they can have new partners, and there are so many different opinions about the food issues. As a result, a child needs support from a wider health service system, including parents, stepparents, and grandparents. All in all, our empirical evidence indicates that the IKPs could help families in the value co-creation process by motivating and empowering to lifestyle changes if the IKPs were designed to take the families into account. However, value is sometimes co-destructed as families are left unmotivated and incapable to undertake the required changes. In the following, we set six theoretical propositions for further testing and discuss our findings in the light of the existing theory basis.

Our findings propose that IKPs influence the use of information and knowledge in a health service system, and that the use of information and knowledge influences the motivation and ability of patients and their families to change health behavior (both value co-creation and value co-destruction). As a result of our abductive exploratory study, we provide a framework for linking IKPs with value co-creation in public health care (Figure 1). The framework includes six propositions (Table 2) that are set in this article. The framework identifies the interlinkages between different parts of IKP, and between IKP and health behavior change, which manifests value co-creation and co-destruction. The theoretical propositions help service researchers to incorporate IKPs and health behavior change when studying value co-creation.

Our contribution to health marketing and TSR literature can be summarized in five points. First, we link organizational activities to the motivation and empowerment of patients and their families. Whereas the studies by

Table 2. Research Propositions for the Role of IKPs in Health Care Value Co-Creation and Their Tentative Explanations.

Information and knowledge process	Propositions	Rationale
Collecting information	Proposition 1: Complete and accurate collection of patient information influences how information and knowledge are used in a health service system.	More complete and accurate information in EPRs is helpful to its effective use (Häyrinen, Saranto, & Nykänen, 2008). Particularly, data entered by patients and their parents result in more complete information.
Transferring and storing information	Proposition 2: Information transfer and storage influence how information and knowledge are used in a health service system.	The way of storing information influences how much information is used by health care professionals (Reiner, Siegel, Hooper, & Protopapas, 1998), particularly as information is more easily retrieved from structured notes (Ho, McGhee, Hedley, & Leong, 1999).
Sharing and creating knowledge	Proposition 3: Knowledge creation and sharing influence how information and knowledge are used in a health service system.	Professional boundaries, shift work, and other contextual barriers influence how knowledge is created and shared in health care, and ultimately the quality of health service (Tabrizi, 2013).
Using information and knowledge	Proposition 4: The use of information and knowledge in a health service system influences value co-creation (or co-destruction) which is manifested as progress (or regress) in health behavior change. Proposition 5: The transition from preintention to intention stage requires the use of information and knowledge that increases the motivation of patients and their families to change health behavior. Proposition 6: The transition from intention to action stage requires the use of information and knowledge that increases the perceived ability of patients and their families to change health behavior.	Knowledge translation and utilization research (Straus, Tetroe, & Graham, 2011) supports the idea that patients benefit from the use of knowledge. Health behavior research encourages focusing on the particular impact on motivation and empowerment.

Note. IKPs = information and knowledge processes; EPRs = electronic patient records.

McColl-Kennedy et al. (2012), Spanjol et al. (2015), and Sweeney, Danaher, and McColl-Kennedy (2015) focus on patients' value co-creation practices, we extend the view to the practices of health care organizations (Rosenbaum et al., 2011). This is important, as we have had a limited understanding of how organizations can facilitate the patient's value co-creation (Palumbo, 2016; Zainuddin et al., 2016). We argue that sometimes the behavior of patients and their families can be explained through the behavior of health care professionals. Thus, we shift the focus from the physician–patient interface (Echeverri & Skålén, 2011) and multi-actor interactions (Fyrberg Yngfalk, 2013) to a more detailed understanding of the collective efforts for reaching common objectives.

Second, we highlight the importance of the role of knowledge integration in value co-creation. Health marketing and TSR literature have to date largely ignored the role of IKPs in explaining value co-creation. By taking a closer look at the influence of organizational practices and IKPs on transformative service, we extend the view from the performance of individual actors to a wider health service system, which can be improved through integrated care planning and coordination (Meyer, Jekowsky, & Crane, 2007).

Third, we introduce a shift toward systems thinking that has remained underutilized in health marketing and TSR literature. This study extends the view not only to service providers but to the requested collective level of consumer entities, or "third parties" (Anderson et al., 2013; Hardyman, Daunt, & Kitchener, 2015), that is, families of child patients. To enrich the discussion, we introduce the concept "health service system" that refers to a configuration of actors, systems, and processes that aim at the improvement of a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.

Fourth, we conceptualize value as "an improvement in system well-being" (Vargo et al., 2008, p. 149) which is manifested in this study as health behavior change. We consider that our unique manifestation of value helps scholars in health marketing and TSR to link their studies with more advanced concepts in health behavior change literature (Lippke et al., 2005; Prochaska & Velicer, 1997; Vries et al., 2005; Weinstein, 1988). Furthermore, by highlighting health behavior change, it is possible to shift attention in health marketing and TSR from service quality (Chaniotakis & Lymperopoulos, 2009; Lagrosen & Lagrosen, 2007), that is *a posteriori* evaluation of the

doctor's performance, to lifestyle changes equivalent to "compliance with the physician's advice" (Hausman, 2004, p. 415). Prior research shares the view that good interaction between the health care professionals and the patient has an impact on the care results and patient satisfaction (Zainuddin, Russell-Bennett, & Previte, 2013), and that satisfaction can be improved with more efficient knowledge management (Wang, 2013). While providing supporting evidence to the importance of good interaction, we also emphasize that satisfaction of the quality of care does not automatically render health behavior changes. Thus, we define value co-creation as well as co-destruction from the perspective of a system's well-being (health behavior change) rather than merely as the satisfaction with the service encounters. In addition, we provide empirical evidence to Manika and Gregory-Smith's (2017) conceptual framework of the determinants of health behavior across the stages of health behavior change by discussing how IKPs could enable more persuasive health marketing communication messages.

Fifth, we underline that health care processes may have a negative influence on the well-being of actors (Anderson et al., 2013). This is unique to health marketing and TSR, as of today the studies on value co-creation in health care focus on positive outcomes. We answer to the call to identify potential barriers for value co-creation in health care (Hardyman et al., 2015). Instead of blaming patients to "misbehave" (Echeverri, Salomonson, & Aberg, 2012), we argue that it is worthwhile to have a more holistic, yet detailed, view to understand the causes of value co-destruction. In other words, co-destruction of value may also stem from the adherence of health care professionals (Cabana et al., 1999), which can be a consequence of weak organizational IKPs.

Managerial Implications

As noted by Ouschan, Sweeney, and Johnson (2006), health care professionals should provide more than information to empower patients. Our study reveals that there is often enough information to motivate families to lifestyle changes but counseling does not help patients and their families to proceed from intention to action. Families with obese children need a different kind of counseling depending on whether they are intending to change lifestyle or not. Therefore, instead of highlighting the importance of advice giving frequency (Seiders, Flynn, Berry, & Haws, 2015), health care organizations should focus on the type of advice that is given to patients and their families. Thus, we echo Black and Gallan's (2015) plea to improve the identification and activation of patients' support networks to facilitate value co-creation in health care. As noted by Mende and van Doorn (2014), transformative service providers should know the involvement and attachment styles of the patients, and provide tailored service accordingly.

To provide tailored services to patients and their families, it is necessary that the organization collects information that enables the effective use of information and knowledge. There is a need to consider what kind of information is needed by various actors and ensure that the information is collected and stored in a way that makes it available to whomever the information may be useful over the years. This requires a critical view of the IKP from multiple stakeholders to ensure that it supports patients and their families.

Limitations and Future Research

As with any study, this study comes with limitations that need to be acknowledged. First, case study research is typically criticized of lacking generalizability beyond the immediate context, although this is not the purpose of the method (Yin, 2009). Particularly, as the data from patients and their families were limited (due to the small number of patients in the "weight path" of UA1 and UA2), it is not possible to generalize the results to a larger population. Instead, we set six theoretical propositions for further testing. As a result, we invite other scholars to employ qualitative research to refine our theoretical model as well as quantitative studies to verify the results.

Second, we are limited in having a look at a traditional health care system. Hardyman et al. (2015) and Loane et al. (2015) highlight the role of health service interaction to understand patient engagement. These interactions are not limited to the face-to-face meetings with general practitioners but are extended to pre-consultation phase and encounters with friends, family members, and even online forums.

Third, we identify that unequal motivation and capabilities of divorced couples and grandparents cause potential conflicts to required health behavior changes. By changing the focus from patients to families, we contribute to the better understanding of the role of social context in value co-creation (and co-destruction) in TSR. However, the data from families are limited and further research is called for understanding how IKPs influence the health behavior change in a wider health service system.

All in all, lifestyle changes require an understanding of why changes are necessary as well as capabilities to put the changes into action; otherwise, the lifestyle changes do not take place. Therefore, we suggest that scholars, who are interested in health service quality, focus on performance indicators that measure health behavior change or improvement of well-being. Currently, health marketing studies mostly discuss behavioral intentions, satisfaction, or the perception of service quality. These are particularly obsolete in public health care context, where the general mission should be the well-being of the community rather than patient retention.

Appendix A

Background Information of the Health Care Professional Interviews in UA1 and UA2.

ID	Age in years	Total work experience in years	Work experience in current position or similar tasks in years	Date of the interview	Duration of the interview in minutes	Number of transcribed pages
UA1Sp1	50	12	7	April 29, 2009	31	10
UA1Sp2	52	27	18	June 2, 2009	49	13
UA1Sp3	42	26	15	June 18, 2009	26	7
UA1Sp4	52	26	12	June 24, 2009	24	6
UA1Sp5	41	12	9	July 7, 2009	20	5
UA1Sp6	48	27	18	September 30, 2009	31	8
UA1Pr1	30	12	9	September 23, 2009	32	7
UA1Pr2	55	26	5	October 9, 2009	30	7
UA1Pr3	51	31	25	October 22, 2009	59	6
UA1Pr4	51	4	3	November 2, 2009	28	6
UA1Pr5	44	12	7	December 11, 2009	34	8
UA1Pr6	50	26	6	Dec 14, 2009	54	7
UA2Sp1	52	26	8	June 8, 2011	43[a]	9
UA2Sp2	52	27	24	June 8, 2011	60	12
UA2Sp3	62	33	20	June 8, 2011	57	9
UA2Sp4	49	24	5	June 8, 2011	32	9
UA2Sp5	46	20	7	June 9, 2011	30	5
UA2Sp6	34	7	0.2	June 9, 2011	27	7
UA2Pr1	42	19	10	August 24, 2011	46[a]	11
UA2Pr2	63	23	16	September 5, 2011	50	12
UA2Pr3	53	28	15	September 5, 2011	25	6
UA2Pr4	43	16	7	September 5, 2011	30	8
UA2Pr5	54	27	21	September 5, 2011	47[a]	12
UA2Pr6	52	24	14	September 6, 2011	51	10
UA2Pr7	60	32	30	September 7, 2011	29	8
UA2Pr8	47	13	5	September 7, 2011	22[a]	6
UA2Pr9	48	8	6	September 7, 2011	33	7
UA2Pr10	42	18	5	September 8, 2011	34	7
UA2Pr11	62	38	24	September 8, 2011	35	7
UA2Pr12	55	23	7	September 21, 2011	43[a]	8

Note. UA = units of analysis.
[a]Telephone interview.

Appendix B

Interview Guide for the Interviewer in Special Health Care (UA1 & UA2)

The questions of this interview concern the treatment of childhood obesity, multiprofessional collaboration in health care, information transfer in your own organization, and information transfer between primary and special health care.

Background information

- Occupation, birth year, year of (professional) graduation, work history, current position (for how long?), main work tasks

Childhood obesity

- Do you think that childhood obesity is a problem nowadays?
- Have you perceived any differences in the prevalence of childhood obesity in recent years?
- What kind of lifestyle counseling do you give?
- How do the children/families react?
- What are the major challenges in counseling and in the care of childhood obesity?

Integrated care pathway of childhood obesity

- How is the treatment of obese children managed in the hospital?
- Which professionals are involved with the care?
- How many times do the families come here?
- How are the referral and epicrisis practices?
- Who is responsible for the care plan?

Information transfer in your own organization

- How does the electronic patient record (EPR) system work?
- What are the advantages of it?
- Are there any problems with the EPR?
- What are the other channels of information transfer in your organization (e-mail, meetings, telephone . . .)? Do they work well?

Information transfer between the organizations

- How is patient information transferred between primary and special health care?
- Are there any problems?
- Other collaboration with primary health care?

Expertise

- What is the foundation of your own expertise (in the care of childhood obesity)?
- Where do you seek information if you need it?

Information transfer and sharing of knowledge in and between professional groups

- Are there work meetings in your organization/at your work place? How often? Who attends these meetings? Are the meetings multiprofessional/for only one professional group?
- Do you have any other opportunities to share information and thoughts with your colleagues and/or co-workers?

Do you want to say something more about

- the treatment of childhood obesity,
- multiprofessional collaboration, or
- information transfer in health care?

Appendix C

Interview Guide for the Interviewer in Primary Health care (UA1 & UA2)

The questions of this interview concern the treatment of childhood obesity, multiprofessional collaboration in health care, information transfer in your own organization and information transfer between primary and special health care.

Background information

- Occupation, birth year, year of (professional) graduation, work history, current position (for how long?), main work tasks

Childhood obesity

- Do you think that childhood obesity is a problem nowadays?
- Have you perceived any differences in the prevalence of childhood obesity in recent years?
- How are the practices of the children's growth controls?
- If you think that the child is overweight or obese, what do you do?
- Are there some organizational instructions?
- What kind of lifestyle counseling do you give?
- How do the children/families react?
- What are the major challenges in counseling and in the care of childhood obesity?

Integrated care pathway of childhood obesity

- Are you familiar with the integrated care pathway (ICP) of childhood obesity?
- Do you remember meeting some children in your work who have been referred to special health care because of obesity? What kinds of experiences do you have about collaboration with special health care?
- How does the referral process go? How are the practices?
- Have you been in personal contact with the employees in special health care?

Information transfer in your own organization

- How does the electronic patient record system work? What are the advantages of it? Are there any problems with the EPR?
- What are the other channels of information transfer in your organization (e-mail, meetings, telephone . . .)?

Information transfer between the organizations

- How is patient information transferred between primary and special health care?
- How is patient information transferred between different municipal health centers?
- Are there any problems?

Expertise

- What is the foundation of your own expertise (in the care of childhood obesity)?
- Where do you seek information if you need it?

Information transfer and sharing of knowledge in and between professional groups

- Are there work meetings in your organization/at your work place? How often? Who attends these meetings?
- Do you have any other opportunities to share information and thoughts with your colleagues and/or co-workers?

Do you want to say something more about

- your thoughts about the treatment of childhood obesity, multiprofessional collaboration, or
- information transfer in health care?

Appendix D

Background Information of the Patient and Parent Interviews in UA1.

ID	Interviewees	Date of the interview	Duration of interview in minutes	Number of transcribed pages
UA1M1	Mother and son (10 years)	March 16, 2010	22	6
UA1M2	Mother and son (12 years)	May 26, 2010	18	6
UA1M3	Mother and daughter (7 years)	June 4, 2010	24	6

Note. UA = units of analysis.

Appendix E

Interview Guide for the Interviewer in Parent Interviews (UA1)

This interview concerns your experiences as a parent (or guardian) in the care of your child in the child welfare clinic or at the school clinic and in the hospital.

Background information

- Age and gender of the child, number of siblings

Primary health care

- When did someone pay attention to your child's weight for the first time? Who was it?
- What kind of counseling did you get? How did you perceive the counseling?
- Have you made any changes in the child's diet or exercise habits after the counseling?

Information transfer between primary and special health care

- Do you think that information about your child's condition has been transferred between primary (school clinic) and special (the hospital) health care?
- Have there been some overlapping tests or examinations?
- How are your child's follow-ups now arranged?

The counseling

- Have you received new information in counseling? Was the information sufficient? Enough? Too much?
- How did you perceive the interaction with health professionals?
- Has there been enough time for your questions?
- Why do you think that the child's weight management is important?
- Do you have any wishes about the counseling?
- Is there anything else you would like to say?

Appendix F

Interview Guide for the Interviewer in Children's and Adolescents' Interviews (UA1)

I will ask you some questions about the counseling which you have received from the school nurse and in the hospital:

- Why do you think that weight management is important for you?
- Has the counseling been okay for you?
- Have you received too much/enough/too little information?
- Have you had time to ask about something if you have wanted to?
- How have you followed the instructions?
- Do you want to say anything else about these issues?

Appendix G

Background Information of the Patients of the Weight Clinic in UA2.

Age of the child/adolescent (years)	Gender	Time visited at the weight clinic
8	Female	> 6 months
11	Female	> 6 months
11	Female	> 6 months
10	Male	6-12 months
13	Male	6-12 months
16	Female	6-12 months
10	Female	6-12 months
16	Female	6-12 months
11	Male	6-12 months
15	Female	6-12 months
10	Male	> 12 months
8	Female	> 12 months
9	Male	> 12 months

Note. UA = units of analysis.

Appendix H

A Questionnaire for the Patient's Families at [Name] University Hospital Weight Clinic (UA2)

This questionnaire concerns your experiences of information transfer in health care, of the counseling, of your own participation in the care of your child or adolescent, and of the benefits of this participation for your child/adolescent and for your family. The first part of the questionnaire concerns the treatment in primary health care (in the child welfare clinic or school health care) and the second part concerns the treatment in the [name] hospital.

Answer by writing on the line or by making a cross.
Age of the child/adolescent ___years
Gender ___girl___boy
Number of siblings_____
We have visited the [name] weight clinic for
____less than 6 months
____6 to 12 months
____more than 12 months

1. The child's or adolescent's weight was brought up for the first time in the year _____
___at the child welfare clinic or school health care
___somewhere else
If somewhere else, where?_____

2. We have received guidance about weight management at the child welfare or school clinic
about nutrition ___yes ___no
about exercise ___yes ___no
about something else ___
If about something else, what? _____

3a. The counseling at the child welfare or school clinic was (1 = *fully agree*, 5 = *fully disagree*):
– Competent
– Objective
– Friendly
– Reproachful or making to feel guilty
– Practical
– Too general
– Too theoretical
– Difficult to understand
– Supportive and reinforcing of changes
– Just right for the family
– Difficult to apply in the everyday lives of the family
If something else, what? _____

3b. We had enough time to pose questions in the counseling at the child welfare or school clinic
___always
___mostly
___seldom
___never

4. We made changes after the counseling in (1 = *a lot of changes*, 5 = *no changes*)
– Quality of nutrition
– Frequency of meals
– Portion sizes
– Exercise habits
If something else, what?_____

5. In addition, we would have liked the child welfare or school clinic to provide (1 = *fully agree*, 5 = *fully disagree*)
– More practical advice
– Support and encouragement
– Opportunities for family exercise
– A cooking course
– A discussion group for parents
– A club for overweight children
– A discussion group on the Internet
– An opportunity to ask expert advice on the Internet
If something else, what? _____

6. We would have liked the child welfare or school clinic to have more information about (1 = *a lot more information*, 5 = *no need for additional information*)
– Nutrition exercise
– The relationship between rest and sleep in weight management
– Heredity in weight issues
If about something else, what? _____

7. The initiation of the referrals to the [name] weight clinic came
___from us
___from the public health nurse
___from the doctor at the child welfare or school clinic
___from somebody else
If from someone else, from whom? _____

8. We think the child's/adolescent's previous medical history has been in the [name] hospital and (1 = *always*, 5 = *never*)
– Was available in special health care
– Was not available in special health care, the same issues had to be told
– Was not available in special health care, the same tests and examinations were made in primary and special health care

9. We have met at the [name] weight clinic (1 = *every time*, 5 = *never*)
– A nurse
– A doctor
– A clinical nutritionist
– A physiotherapist
– Some other professional

10a. The counseling at the [name] weight clinic was (1 = *fully agree*, 5 = *fully disagree*)
– Competent
– Objective
– Friendly
– Reproachful or making to feel guilty
– Practical
– Too general
– Too theoretical
– Difficult to understand
– Supportive and reinforcing of changes
– Just right for the family
– Difficult to apply in the everyday lives of the family
If something else, what? _____

10b. We had enough time to pose questions in the counseling session at the [name] weight clinic

___always
___mostly
___seldom
___never

11. We made changes after the counseling at the weight clinic in (1 = *a lot of changes*, 5 = *no changes*)
- Quality of nutrition
- Frequency of meals
- Portion sizes
- Exercise habits

If something else, what? _____

12. In addition, we would have liked the [name] weight clinic to provide (1 = *fully agree*, 5 = *fully disagree*)
– More practical advice
– Support and encouragement
– An opportunity for family exercise
– A cooking course
– A discussion group for parents
– A club for overweight children
– A discussion group on the Internet
– An opportunity to ask expert advice on the Internet
If something else, what? _____

13. We would have liked the [name] weight clinic to provide more information about (1 = *a lot more information*, 5 = *no need for additional information*):
– Nutrition

– Exercise
– The relationship between rest and sleep in weight management
– Heredity in weight issues

If about something else, what? _____

14. The guidance at the [name] weight clinic has been easy to apply in everyday life

___yes
___no

15. What has been easy to implement? _____

Why? _____

What has been difficult? _____

Why? _____

16. We think that weight management of the child/adolescent is important because it increases (1 = *fully agree*, 5 = *fully disagree*)

- Good health at the moment
- Good health in the future
- Coping in everyday life at the moment
- Coping in everyday life in the future
- Acceptance of the environment and/or friends at the moment
- Acceptance of the environment and/or friends in the future

If something else, what? _____

17. The biggest challenges for our family in the weight management of the child/adolescent are (1 = *fully agree*, 5 = *fully disagree*)

– Learning frequency of meals
– Learning portion sizes
– Increasing fruits and vegetables in the diet
– Avoidance of sweet or salty treats
– The price of healthy food
– The time required to shop for groceries and/or to prepare meals
– Lack of opportunities to exercise
– Difficulties finding a suitable form of exercise
– Finding time to exercise
– The costs of exercising
– The family or friends do not support weight control
– Lack of child's or adolescent's own motivation
– Lack of a peer support group
– Restriction of TV or computer time

If something else, what? _____

18. Do you think you have had opportunities to influence the care of your child in health care?

__a lot
__a fair amount
__somewhat
__a little
__not at all
__cannot say

Give an example if you'd like: _____

19. The follow-ups of the child's/adolescent's weight are

__controls at the [name] hospital
__regularly
__when needed

__controls in the child welfare or school clinic
__regularly
__when needed

20. In addition to the counseling in health care, we seek information about weight management from (1 = *a lot*, 5 = *not at all*)

– Books
– Magazines
– Television, radio
– Health information sites on the Internet
– News groups on the Internet
– Friends, relatives, acquaintances

If other information sources, what or whom? _____

21. If you'd like to state something more about the weight management counseling or care in health care, write it here (use the back of the paper if needed): _____

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