Healthcare quality improvement by redesign

requires a radical change of mindset amongst employees which cannot be expected to be effectuated in one year. Whereas the findings presented in this dissertation might show trends at the ORL outpatient clinic, full effects of Lean implementation should be monitored longitudinally. Publication bias cannot be excluded in general, as there is a tendency to only publish positive results in literature[46]. The results of process redesign initiatives as displayed in Chapter 2 might therefore be overestimated. Next, even though mixed methods were used to evaluate different aspects of redesign initiatives, the specific questionnaires (for both satisfaction research and semi-structured interviews) might not capture the full effects on these measures. The researcher encouraged the respondents to freely elaborate on each topic and asked if there were important issues left that were not discussed earlier on in the interview, thereby creating space for respondents own concerns. In addition, questionnaires were based on earlier validated questionnaires and outcomes were in line with other literature on the same topic.

In both projects, the researcher took an active role in the design, implementation and evaluation of the redesign initiatives. While this is one of the strengths of PAR, is can also potentially weaken the study findings. Personal characteristics of the researcher might have influenced the answers given by the respondents, the way in which implementation activities were carried out and the content of the redesign initiatives. By working in projects groups, training the researcher in holding interviews and regular feedback sessions with a supervision team however, the potential bias accompanying this type of research is kept to a minimum. Finally, while using theories on organizational routines, process typology, implementation barriers, quality of care and patient-centered care enabled structuring of findings, it should be acknowledged that a plethora of terms and factors exist in international literature, describing the same phenomena. It is possible that by restricting the research to these definitions, other factors that might play important roles were left out from the findings.

SOCIETAL IMPACT

From a societal perspective, the findings of the projects carried out for this dissertation have implications on a national and international level. In this section, the societal impact of the findings presented in this dissertation will be discussed.

Valorisation

The next two paragraphs will describe how the research conducted for this dissertation is useful both nationally and internationally. The additional value of the research described in this dissertation is presented and its relevance to policymakers, scientists and governments is clarified. In the recommendation section, future plans for practice, education and science are defined.

Quality of care on a national level

According to the Dutch government, health care should be affordable, accessible and of good quality. Transparency and monitoring of quality of care is being emphasized on by the Dutch government and several bodies exist to enhance or monitor healthcare quality[47,48]. Overall,

quality of care is monitored by the National Healthcare Institute (In Dutch: Zorginstituut Nederland), emphasizing on measuring patient experiences, enhancing transparency of quality of care and developing standards for quality of care[50]. In addition, the Health Care Inspectorate (IGZ) enforces quality of health services, prevention measures and medical products by advising the responsible ministers and the application of various measures so that health care providers solely offer 'responsible' care[50]. The Inspectorate investigates and assesses in a conscientious, expert and impartial manner, independent of party politics and unaffected by the current care system[50]. Organized by profession, evidence-based medicine creates an important foundation for high quality care in the Netherlands, as guidelines, protocols and standards of care are being used in care delivery. Finally, quality certificates exist in health care, such as certificates and registers for healthcare organizations, providers, management systems and services[51]. Altogether, quality of health care is strongly being emphasized on by the Dutch government. In addition, the Dutch government recognizes the need for PCC, by emphasizing a transition from systems to persons, thereby creating the need to redesign the organization of healthcare nationally[52].

Despite the application of research projects on a local level in this dissertation, findings presented are well embedded in the national emphasis on quality of care. The implications of the findings go beyond local application by shedding light on important topics of healthcare quality to address in the future (i.e. effectiveness, efficiency, patient-centeredness, safety, equity and timeliness). The current state of redesigning healthcare services in order to enhance healthcare quality and the methods by which healthcare quality are and should be evaluated and monitored is of paramount importance. In essence, the findings of this dissertation provide policy makers with scientific background to improve the current state of redesign initiatives in health care by addressing important pitfalls in current initiatives.

On a local level, the key findings as presented in this thesis can be used to guide future redesign efforts in the area of Maastricht. As already stated in the introduction, the Maastricht UMC+ strongly focuses on the adoption of an integrated and cohesive approach to health care, acknowledging the changing needs of patients[53-55]. Redesigning its healthcare services to address the changing needs of patients and achieve the desired level of patient care is an inevitable part of the activities of the Maastricht UMC+. In doing so, lessons can be learned from the efforts described in this dissertation. Most important, the findings suggest that future attempts should be focusing on long-term evaluations of whole-system redesign initiatives, including measures on quality of care (i.e. *if* the redesign initiative works), mechanisms of change (i.e. *why* the redesign works) and organizational context (i.e. *how* the redesign initiative affects the organization).

Quality of care on an international level

The need to redesign healthcare services in order to increase quality of care is not restricted to the Netherlands, but is acknowledged by most Western countries[56-59]. In line with the international

literature on process redesign evaluations, the findings in this dissertation too suggest process redesign to positively influence quality of care. The research conducted in light of this dissertation however, adds to existing literature by using different perspectives to evaluate existing healthcare problems (i.e. the concept of organizational routines), in depth exploration of patients' experiences and perspectives with care delivery, evaluating the effects of process redesign (by means of Lean implementation) at an ORL outpatient clinic and systematically reviewing the literature on the effect of process redesign on quality of care. Apart from the specific root causes, implementation barriers, efficiency gains and changes in satisfaction found in this dissertation, a more general message can be formulated. The findings in Chapter 2 led to the understanding that although redesign initiatives have the potential to improve quality of care, we cannot define which redesign initiative has the most potential in what setting. To overcome fragmentation of redesign efforts, we need to build evidence around the three questions posed in this dissertation. More specifically, also internationally, future redesign initiatives should include measures on quality of care (i.e. *if* the redesign initiative works), mechanisms of change (i.e. *why* the redesign works) and organizational context (i.e. *how* the redesign initiative affects the organization). This call for improved evaluations of redesign initiatives closely fits to other efforts made on this topic internationally. The World Health Organization (WHO) has detected important evidence gaps in the delivery of people-centered and integrated health services in a recent interim report[59]. Amongst others, the WHO urges to engage all stakeholders in the development and measurement of people-centered, integrated health services and strongly advises to incorporate quality improvement into health systems reforms[59]. Next, initiated by Berwick[56] in 2008, scholars on quality improvement are already shifting from only addressing efficacy issues of redesign initiatives towards measuring the so-called 'Triple Aim'. Understanding that the success of quality improvement efforts (such as redesign initiatives) relates to three interdependent goals (i.e. improved experiences of care, improved population health and lower per capita costs) finds audience by policy makers, professionals and scholars around the world. Generally, the impact and success of redesign initiatives go beyond effectiveness and using frameworks like the Triple Aim and the three questions posed in this dissertation can aid further understanding and implementation efforts of redesign initiatives internationally.

RECOMMENDATIONS

The general message from this dissertation is that better evidence needs to be produced on *if* redesign initiatives improve quality of care, *why* redesign initiatives work or not and *how* redesign initiatives affect the organization or system. Based on this message, recommendations for practice and future research can be made.

Recommendations for practice and education

The main findings from this dissertation urge policy makers in health care to address the need for quality improvement on a long-term, whole systems manner. Financial incentives need to stimulate long-term redesign initiatives, preferably in whole-system settings. And although a

whole-system redesign initiative is not likely to be feasible, projects need to move away from redesign initiatives being implemented at departmental level. A first step could be to initiate process redesign for specific populations (such as oncology patients) or in an entire organization (e.g. an entire hospital instead of one outpatient clinic).

In doing so, all stakeholders involved should be aware of the urgency to change, specific goals need to be formulated on all aspects of redesign (i.e. the *if, why* and *how)* and financial sources need to stimulate long-term follow-up of the redesign initiative. In essence, policymakers need to specifically focus on the creation and definition of value in health care in general, instead of optimizing specific services[13,60].

Defining all stakeholders in redesign initiatives goes beyond the scope of this dissertation, the patient is however specifically addressed here. Creating value for the patient can be seen as the overarching goal of healthcare delivery[13,60], but patients are less frequently involved in process redesigns. Patients' opinions are however of value in such redesign projects. It is therefore recommended to add patients to project groups while undertaking redesign efforts, as is done in experience based co-design (EBCD) projects. Even though such redesign efforts might be time-consuming at first stage, using EBCD in addition to common redesign techniques add a valuable perspective and will aid redesign projects in reaching their primary goals (i.e. improving quality of care for the patient). Furthermore, as recently evaluated by Locock et al[63], audio and video archives of patient experiences can be used in more than one project, leading to what they call accelerated EBCD. Therefore, besides the positive associations between patient experiences and health outcomes for a wide range of diseases, investing in EBCD next to common redesign techniques is not necessarily a time-consuming and costly procedure if applied to more than one project – which a whole systems approach implies. In addition, it is important to notice here that EBCD does not replace existing redesign techniques such as Lean Thinking, Six Sigma or BPR. EBCD should be considered as an addition to these techniques.

Project groups concerned with process redesign can consider double loop learning in order to achieve sustained improvements. This double loop learning needs to specifically take into account the unlearning of the 'old' routines (by means of unlearning mechanisms, values and beliefs) while also learning 'new' routines.

Finally, the current developments in health care not only ask for a redesign of its service delivery, healthcare providers require additional skills and a change in mindset as well. Professionals need to be able to closely cooperate with each other in order to deliver multidisciplinary whole-system care. A committee on Innovation of healthcare professions and education therefore advises to change the existing curriculum of health professions[61]. This dissertation adds to that advice that changing the existing curriculum of medical education is a prerequisite to change existing routines in healthcare and specific attention should be paid to unlearning the existing routines that need to be changed.

Scientific recommendations

The call for comprehensive process redesign research can be heard throughout this dissertation. Comprehensive process redesign research can stimulate ongoing efforts in health care by unraveling the black box of process redesign, by stimulating evidence-based redesign implementation and by the uptake of whole-system approaches in process redesign. More specifically, the main message in this dissertation urges scholars in the field of quality improvement to include measures on quality of care (i.e. *if* the redesign initiative works), mechanisms of change (i.e. *why* the redesign works) and organizational context (i.e. *how* the redesign initiative affects the organization) in evaluating redesign initiatives. The interpretation of the *if, why* and *how* questions is important in this matter, as uniform evaluations will lead to improved evidence-based redesign initiatives. Therefore, it is also recommended to develop a set of indicators that can be used for the evaluation of redesign initiatives. Multiple initiatives already exist, as the WHO for example currently develops a set of indicators for people-centered and integrated health services[59]. The indicator set should include indicators on experiences of care (e.g. quality of care indicators), population health and costs of care, thereby addressing the importance of the 'Triple Aim' in health care.

The evaluation of redesign initiatives should move away from classic designs such as RCTs and controlled before and after studies and instead focus on using PAR or realist evaluation as an approach. As realist evaluation poses that context and mechanisms together are responsible for outcome patterns, using this type of evaluation will inevitably lead to understandings as to *how* and *why* outcomes are achieved, and for *whom* in *which* setting. In applying this type of research, it is important to generate a profile of a specific 'PAR-researcher' in order to achieve high quality research. A typical PAR-researcher should have distinct communication skills, is responsive to organizational features and has the capacity to relate and translate science into practice. The role of the researcher in PAR projects should be subject to evaluation during the project as well.

Comprehensive evaluation of redesign efforts should carefully consider using longer follow-up periods. Redesign efforts often ask for changes in the mindset of the users, the impact of which can only be determined in the long term. In addition, as redesign projects might use forms of incremental instead of radical change, outcomes can only be expected to present in the long term. Therefore, in order to produce sound evidence, long-term, comprehensive evaluation of redesign projects is necessary. In order to enhance feasibility of long-term evaluation, modeling studies can be used at the outset of redesign initiatives to estimate their effects on certain aspects. It should be carefully noted however, that important contextual factors of redesign initiatives are less suitable for modeling studies and the effects of these studies can therefore be overestimated[62,63].

Long-term follow up of redesign initiatives can only be effectuated if financial resources stimulate these research designs by developing long-term grants for this type of research. Together, directory boards of healthcare organizations, health insurance companies and other funding agencies like ZonMw and NWO need to reconsider the terms of their research programs

in order to create a climate for long-term evaluations. This way, skilled PAR-researchers can be retained in redesign initiatives, enabling high quality evaluations of these initiatives.

Finally, in order reach a state of evidence (or impact)-based redesign, the uptake of this type of research in scientific literature needs to be improved. Using structured reporting guidelines such as the SQUIRE guidelines[64] to report on these initiatives might help researchers to get their studies published and improve reporting of these projects. This recommendation however addresses both the need for improved reporting of redesign initiatives, as well as the need for editors of international peer-reviewed journals to recognize the need to publish these evaluations, regardless of their (positive or negative) outcomes.

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