

ORIGINAL ARTICLE

Responses after participating in Family Health Conversations in families with a family member who has suffered a stroke: A mixed methods research study

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ABSTRACT

Background: It has been proposed that support for families in which a family member has suffered a stroke should involve the whole family system.

Aim: The aim was to evaluate the responses of Family Health Conversation (FamHC) in families with a member under the age of 65 who has been diagnosed with stroke.

Methods: In this mixed methods research study, families were included in an intervention group and in a control group. For both groups pre- and post-intervention quantitative data was collected and for the intervention group, qualitative data was collected post-intervention. Underlying theoretical propositions and the two data sets were then integrated.

Results: Family health measured as “the general atmosphere of the interaction of the family” had improved in the intervention group when compared to the control group. The intervention families, moreover, described how they had become more cooperative, their communication had improved, they had become more confident with their situation and also when planning for the future when comparing to before the FamHC.

Conclusions: Based on the empirical results supporting the theoretical proposition underlying FamHC, we conclude that it works as intended, and the evidence for the theoretical proposition is thereby strengthened. This paper contributes to the scientific evidence concerning FamHC. With the available evidence, RNs are suggested to consider changing practice so as to work in a more family-centred way to support families living with ill-health. Implementing FamHC can be one way of undertaking such supportive work.

Key Words: Family functioning, Family health, Family systems nursing, Healthcare research, Mixed methods research, Stroke patients

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1. INTRODUCTION

1.1 Family Health Conversation (FamHC)

A family systems nursing intervention, FamHC, has been developed.^[1] The FamHC has been influenced by the Calgary Family Assessment Model (CFAM), the Calgary Family Intervention Model (CFIM),^[2] the Illness Beliefs Model (IBM)^[3] and their underlying theories. A central theoretical assumption that underpins the FamHC is to adopt a systemic, cybernetic approach^[4] which puts focus on the interplay between and the relationships among family members' beliefs and experiences. Furthermore, each family member's view is to be acknowledged as equally valid.^[1-3] Using narratives^[5] is in focus, for the purpose of acknowledging strength and resources to handle the illness. Therefore, reflections^[6] are emphasized, in order to find new meaning and opportunities, which together with a salutogenetic approach,^[7] shift the focus from disease and disability to positive aspects and well-being.^[8] To our knowledge FamHC is the only Family Systems Nursing intervention evolved in Sweden which is the advantage for use in this culture. FamHC has not, yet, been compared to other family interventions but as influenced from the Calgary assessment and intervention models, FamHC rather share these models' strengths than differ.

The theoretical proposition supporting FamHC can be summarized as: "FamHC creates a context for change and support the creation of new beliefs, new meaning, and new opportunities in relation to problems described by the family. Directing the practice toward health promotion and relief from suffering will sustain family health".

1.2 Living with stroke

The impact of stroke may have life-changing effects not only for the stroke sufferer but also for the whole family. Being forced to adapt to physical, mental and, cognitive impairments in the affected family member^[9] and/or impairments in social areas of functioning including the ability to return to work^[10,11] has a major impact on family life.^[12] This is often "invisible" to those outside of the family.^[13] Overwhelming feelings, problems with interpersonal communication and role changes may take place within the family.^[14] Furthermore, family members may experience uncertainty and feel great demands on them as a result of the changes and losses due to the disease.^[15] Family members are worried about both the affected family member and themselves, of being trapped in a caring role and about their future.^[14,16] They also suffer severe emotional stress^[12,17] and high levels of distress.^[18] Thus, family members are looking for a new sense of normality and to overcome desolation.^[19] A three-year follow-up study shows that both spouses and family members who suffered a stroke experienced decreased life

satisfaction, spouses even more so, which related significantly to the affected family members' life satisfaction.^[20] While the stroke sufferer gradually adapts to the life situation, it may become more demanding for other members in the family.^[21]

1.3 Family support

In studies, which refer to highlighting the importance of support for families with a family member who has suffered a stroke, there are arguments about the importance of health-care professionals supporting the whole family.^[12] However, the support and assistance provided by health and social services for the families are often insufficient or not suited to experienced needs.^[22,23] A family systems nursing intervention, such as FamHC, has the potential to be a way of supporting families' needs, but this still has to be evaluated from various perspectives. It has previously been shown that family systems nursing interventions can lead to family responses such as improved understanding and capability, enhanced coping, caring more about each other and the family, improved family and individual emotional well-being, improvement in interactions within and outside family, and healthier individual behaviour.^[24] Empirical studies revealing effects and responses after participating in FamHC are, however, still scarce, but the intervention has started to be evaluated from various angles.^[25-29] From these studies, FamHC has been described as a successful conversation with a possible working mechanism in which narrating, listening and reconsidering in interaction support family health. The FamHCs mediate understanding of multiple ways of being and acting, see new possibilities and developing new meanings and hope to make the situation manageable. Furthermore, to talk to someone outside the family was found to be important, given possibilities to create a whole picture of the situation. Listening to each other, making the situation manageable, and to strengthening family cohesion were positive experiences.^[25,30,31] FamHC has also been suggested to be cost-effective.^[27]

1.4 Rationale for the study

It has been suggested that more studies designed to strengthen the evidence base for the responses of family systems nursing interventions are still needed.^[24] Adding qualitative methods to a quasi-experimental design, normally built on only quantitative methods, can deepen understandings of the outcomes of an intervention^[32] and several of the studies cited above used qualitative methods. However, the evaluation of complex interventions^[33] such as FamHC may benefit from the use of mixed methods research providing evidence from various sources. This enables a more com-

prehensive understanding of both whether an intervention works as intended or not and how it works,^[34] explicated, for example, in a theoretical proposition. Thus, the aim of this study was to evaluate responses of the intervention FamHC in families with a member under the age of 65 diagnosed with stroke.

2. METHODS

This study is part of a larger project evaluating nurse led FamHC implemented for families when one family member suffer stroke. The intervention’s core components and nurses fidelity to these when implementing FamHC has been described.^[35] Moreover, the family members’ experiences with participating in this systemic family nursing intervention,^[28] what couples choose to focus on during the family conversations,^[36] and also the interventions cost-effectiveness^[27] are described earlier.

In this present study, a mixed methods research design^[37,38] was used considering the quantitative and qualitative data collected as having equal weight. The analytical approach was parallel, i.e. the collection and analysis of both data sets were carried out separately and then integrated^[39] and compared to the present theoretical proposition. The researchers were divided into a quantitative and a qualitative analyses group, and the results were not discussed in depth among all the researchers until the phase of integration.

2.1 Sample and setting

The sample included families in an intervention and a control group consecutively^[40] invited to participate, from October 2010 to December 2011, during their stay in a rehabilitation centre. Inclusion criteria were families in which a family member below the age of 65 had suffered a stroke, and the exclusion criteria were families who did not speak and read Swedish. For the intervention group, a total of 12 persons with stroke (eight male and four female) and for the control group a total of 12 persons (seven male and five female), were asked to participate. Seven of the persons for the intervention group (six males and one female) and seven for the control group (four males and three females) consented to participate. These people who had suffered a stroke then identified close family members who they defined as belonging to their family.^[2] In total, seven families consisting of 17 family members were included in the intervention group, and seven families consisting of 21 family members in the control group. For an overview of the participating families’ demographics, see Table 1. Both groups received standard care, i.e. medical treatment and physical training, at a rehabilitation clinic to which the patients, who were under the age of 65 and had suffered a stroke, were admitted. In addition,

the intervention group received FamHC as described below in 2.2. The researchers’ only interaction with the control group was that one of the researchers (BB) contacted the members of the control group for informed consent before pre and post measures. Written and verbal information concerning the aim of the study, voluntary participation, and confidentiality were given to the participants, and a written informed consent was obtained.

Table 1. Overview of the participating families’ demographics

	Intervention (n = 17)	Control (n = 21)	Sig.
Age total group (mean <i>SD</i>)	44 ± 14	48 ± 16	Ns
Sex (F/M)	7/10	10/11	Ns
Age persons with stroke	58 ± 6	52 ± 3	t-test 0.05
Sex (F/M) persons with stroke	1/6	3/4	Ns
Haemorrhage/ Infarct	1/6	5/2	Fischers’ exact test 0.051
Family role	Person with Stroke n = 7 Partners n = 5 Children n = 5	Person with Stroke n = 7 Partners n = 6 Children n = 6 Parents n = 2	Ns
Higher education (defined as “studies above upper secondary high school” i.e. University or other forms of high school studies) Yes/No	6/11	9/11	Ns
Working/Studying	6/2	16/3	Chi square 0.008

2.2 Intervention

The FamHC consists of a series of three one-hour conversations repeated about every two weeks. All conversations were carried out in the families’ homes. Six registered nurses (RNs) conducted the FamHC in pairs. One took the major responsibility during the conversations, while the other was a co-participant offering reflections on the content of the conversation at the end.^[1,35] The RNs were experienced nurses educated at an advanced university level on family systems nursing and FamHC^[41] and with varying experience of conducting FamHCs. When elaborating the intervention, theory-based core components (see Table 2) of the intervention^[35] were followed. The conversations strove to identify resources within and outside the family, but also to acknowledge suffering. What the families considered to be important constituted the conversation topics. Reflecting questions were offered in order to challenge constraining beliefs and create alternative ways for families to think about their situation.^[1,2] At the end of each conversation, the RNs offered their reflections on what had happened during the conver-

sations; common beliefs within families were challenged, and the resources of the family were highlighted. During the first conversation, all family members were invited to tell their stories and to listen to each other's stories. The second conversation was intended to focus on problems, suffering and beliefs identified in the first conversation. The third conversation focused on family strengths and resources for the future. A "closing letter" was sent to each family two or three weeks after the last conversation^[42] summarising the RNs' reflections on the three conversations, acknowledging the families suffering and highlighting their resources.

Table 2. Core components of the Family Health Conversation (FamHC)

Jointly reflecting with the family on expectations of the conversation series
Exploring the family structure
Ensuring that all family members are given space within the conversation and have the opportunity to narrate their experiences
Jointly prioritizing which problem(s) most need to be discussed
Exploring significant parts of the family narratives
Using reflective questions
Using appropriately unusual questions and challenging family beliefs
Giving commendations and acknowledging suffering
Inviting family members to reflect on each other's narratives
Offering nurses' reflections
Asking what has happened since the last conversation
Closing the conversation series

2.3 Quantitative data collection and analysis

2.3.1 Measures

Pre and post measures (1 month) were taken with the Swedish version of Family Hardiness Index (FHI),^[43] measuring family members' experiences of the general atmosphere for social interaction within the family^[44] and the Swedish version of Health Hope Scale (HHI-S), measuring hope as a multi-dimensional dynamic power.^[45] Moreover, health-related quality of life (HRQoL) was assessed with the EQ-5D classification system^[46] and SF-36.^[47]

The FHI consists of 20 statements and is scored on a four point Likert-type scale. A four-subscale version consisting of the subscales: Commitment, Confidence, Challenge and Control and a total score are calculated. A higher score reflects greater family hardiness. In a recent study, the Swedish version of the FHI showed good internal consistency ($\alpha = 0.86$) though the four-factor solution of the scale could not be fully verified.^[43] HHI-S consists of 12 items scored from 1 (strongly disagree) to 4 (strongly agree) with negative items to be reversed. In this study, the total score was used. A higher score represents greater level of hope.^[48] The HHI-S has been translated and found to be valid in a Swedish

context^[45] demonstrating a Cronbach's a coefficient of 0.96.

EQ-5D classification system constitutes an EQ-5D index giving a self-rated health state description in five dimensions; mobility, self-care, usual activities, pain/discomfort, and anxiety/depression and EQ-VAS.^[46] Each dimension of the index is estimated on three levels from "no problem" to "great problem".^[49] EQ-VAS is a 20 cm-long visual analogue scale from 0 (worst imaginable health) to 100 (best imaginable health). EQ-5D has been found to have acceptable validity when assessing HRQoL after a stroke.^[50] The SF-36 consisting of 36 items included in eight subscales was summarized in two component scales: a physical component summary (PCS, including four subscales) and a mental component (MCS, including four subscales). SF-36 has been found to be valid and reliable when used with stroke-patients.^[47]

2.3.2 Statistics

Differences between demographic data in the intervention and control groups were analysed using independent *t*-test and Chi-square test. Independent *t*-test was used because the two groups were not associated to each other. Regression analysis was performed in order to assess the effect of the intervention on families' health, resilience and hope. Outcome variables were the difference between baseline and follow-up for the measures FHI, HHI-S, EQ-5D and SF36 respectively. For investigating the normality assumption of the outcome variables, a calculation of skewness was used. Normally distributed outcomes with identity link function were assumed for symmetrical outcomes, and a Gamma-distributed outcome with log link function was assumed for outcome variables with a skew distribution. Due to the fact that participants were correlated in families, an exchangeable correlation structure was assumed, and the parameters were estimated by Generalized Estimating Equations (GEE). The focus of the analyses was the difference in effect between the intervention group and the control group, and the analyses were adjusted for the age and sex of the participants. Results are presented with differences between the intervention group and control group in effect change, standard error of this difference, *p*-values and effect size (standardized parameter estimates from the regression analyses).^[51]

2.4 Qualitative data collection and analysis

2.4.1 Interviews

Semi-structured audio-taped evaluative interviews were conducted separately with each intervention family member,^[40] one month after the FamHC was completed. They were all initially asked; "Could you please tell me whether FamHC, including the closing letter, has had an effect on you and your family, and if so, how?" Follow-up questions covered the focus on the cognitive, affective and behavioural aspects as

well as positive and negative effects. To capture a family perspective, participants were reminded to have their family in mind when they reflected over the questions. The interviews lasted 20-45 minutes and were carried out in the participants' homes by a researcher who had not been involved in the FamHC. The interviews were transcribed verbatim with pauses, silences, laughter and other emotions noted in the text.

2.4.2 Qualitative content analysis

The qualitative data was analysed with an inductive approach using qualitative content analysis.^[52] The interview text constituted the unit of analysis, and was read thorough to get a sense of the whole. Meaning units, sentences or paragraphs containing aspects related to each other through content and context^[53] were then search for and condensed. The condensed meaning units were sorted into subcategories based on similarities and differences. The subcategories were then abstracted into categories. The analysis was an ongoing process, going from the condensed meaning and the subcategories until agreement among the researches was reached.

2.5 Integration

To integrate the theoretical proposition and the results giving the quantitative and qualitative data equal weights, we used triangulation as a “methodological metaphor” as argued by Erzberger and Kelle^[54] and exemplified by Östlund et al.^[55] The metaphor helps to describe relationships, represented by the sides of the triangle, between findings and propositions on the empirical (i.e. the two data sets) and theoretical levels (i.e. the theoretical proposition), represented by the point of the triangle, as this was part of the aim of the study.

3. RESULTS

The results are reported in three sections; the quantitative results and the qualitative findings of the responses to the FamHC one month after the intervention, followed by the integration.

3.1 Quantitative results

There were no significant differences between families in the control group and in the intervention group concerning age, sex, family roles and educational level. However, persons with stroke in the intervention group had a significantly higher age ($p = .05$) than those with stroke in the control group. Family members worked or studied to a lesser degree in the intervention group compared to the control group ($p = .008$).

FHI total score, showed significant differences in change between participants in the intervention and the control group ($p = .000$). The FHI total score for participants in the in-

tervention group increased significantly compared to the control group (ES = 0.763). The subscales Commitment and Confidence also showed significant improvement in the intervention group compared to the control group ($p = .000$ and ES = 0.763 vs. $p = .036$ and ES = 0.500). HHI-S total score showed that hope decreased in both groups and there was no significant difference between the intervention and the control group. Scores for EQ-5D showed no significant differences between the groups. Physical and mental health for SF36 showed no significant differences in changes between the groups (see Table 3 and Figure 1).

Table 3. Differences in effect and responses between intervention group and control group analysed with Generalized Estimating Equations (GEE) and adjusted for age and sex. Positive effect size means that the intervention group had a greater change in effect.

Instruments (Scales)	Difference in effect between intervention group and control group	p-value	Effect size
HHI	Difference (SE)		
Total	-0.157 (1.15)	.892	-0.029
FHI			
Total	6.434 (1.48)	.000	0.763
Commitment	3.828 (1.16)	.001	0.736
Confidence	1.011 (0.48)	.036	0.500
Challenge	0.971 (0.55)	.079	0.395
Control	0.603 (0.48)	.214	0.443
EQ5D			
Total	0.085 (0.07)	.201	0.258
VAS	8.373 (6.39)	.190	0.380
SF36			
Physical health	4.030 (2.27)	.076	0.346
Mental health	0.466 (4.36)	.915	0.042

3.2 Qualitative findings

The families in which one member had suffered a stroke described their responses to participating in the FamHC as the categories and sub-categories shown below.

Coming closer as a family

Enhanced communication within the family

The communication patterns changed after participating in the FamHC. The family members talked more and in a more open manner about family relationship, about themselves, the illness and the situation for everyone. The family member who had suffered a stroke more often initiated a conversation, now more nuanced and calmer. The ability to share and talk about things previously carried alone was liberating. Also, topics not raised before by reason of not upsetting each other were now expressed. Even if there were different opinions,

they now continued the conversation without discontinuation and listened more to each other. *“The conversations have*

helped us to talk a little bit more. More broadly about the relationship, me and the disease and her and her illness” (Man with stroke C1).

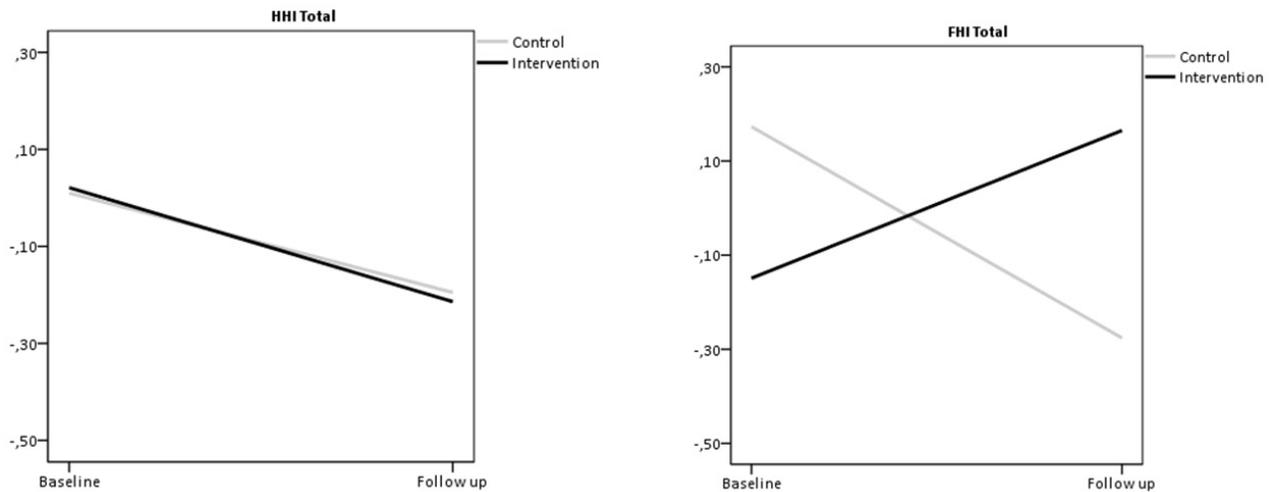


Figure 1. Standardized values of HHI and FHI

Shared responsibility within the family

The families had learned to deal with their situation together, and any problems became a shared responsibility for them. A new feeling of peace had entered into the family. Roles had become more evident, whether the roles had changed or not. Activities were adapted to the new functional level of the family member who had suffered a stroke. Furthermore, they talked more about what the affected family member was able to do and what other family members could do to support and help them, but also how changes in activities could affect other family members. *“It will be easier to work together in general” (son A3).*

Improved relationship within the family

The family members had improved their relationship. By comparing and adjusting different views on significant issues, mutual understanding improved. The family had become more thoughtful about and more considerate to each other. Feelings of togetherness around family problems had also grown. They were strengthened in relation both to the individual and the family level. *“We had different ways of looking at things and then we have been able to reconcile, syncing them. So it has worked well, I think” (Son F1).*

Reappraisal of life

Thinking in different or even new ways

The families had a better understanding and felt more confident about the illness. They realized more the consequences of what had happened and what might still happen in their situation. As the family members had learned to see beyond

themselves, their understanding improved of how the illness also affected the other family members. FamHC helped them think in new ways. The family members perceived their own situation in a different light and acquired a more nuanced picture of their past and a more realistic view of their present and future. Families could see new alternatives for problem solving or how to cope with their situation. They tried to live more in the present than before, and to be more aware of the importance of the small things in life. *“I’ve begun to think in a different way, starting a different mental process leading towards a more positive way” (Man with stroke C1).*

Set about the future with confidence

Families now think forward and find it easier to look to the future knowing there is help if needed and alternative ways of looking at life. It was positive on the part of the family members of the stroke victim that the person with stroke had started activities such as talking to unknown people despite having speaking or cognitive difficulties from the stroke and also to begin physical activities. They all become more confident and brave and an awareness of having the capability to face the future and to make decisions. *“The conversations have given thoughtfulness too; it’s something good. That you are thinking; it provides the basis for thinking ahead too” (Man with stroke G1).*

Creating balance in life

An insight into the importance of creating balance in life had been gained related to not working too much and not letting this influence one’s own health and family life; i.e. to get rid of obligations. An awareness was reached of the limitations

for the family member who had suffered a stroke, but also the strengths as a family with resources to handle the new situation. Another insight gained was that things need to be changed under structured forms. *“Work is not everything in life, though it is fun to work. You must remind yourself about that. This I have to take with me, for my sake and for the others’ sake” (Man with stroke G1)* (see Table 4).

3.3 The integrated results

To illustrate the links between qualitative and quantitative empirical findings and the suggested theoretical proposition of FamHC, the integration is first presented as a figure showing the triangle metaphor.^[54] The integration is then further

elaborated in the text. In this study, we interpreted the quantitative results and qualitative findings to be mostly convergent and also partly complementary. The empirical results are in line with the theoretical proposition (see Figure 2).

Table 4. Overview of Categories and Sub-categories

Category	Sub-category
Coming closer as a family	Enhanced communication within the family
	Shared responsibility within the family
	Improved relationship within the family
Reappraisal of life	Thinking in different or even new ways
	Set about the future with confidence
	Creating balance in life

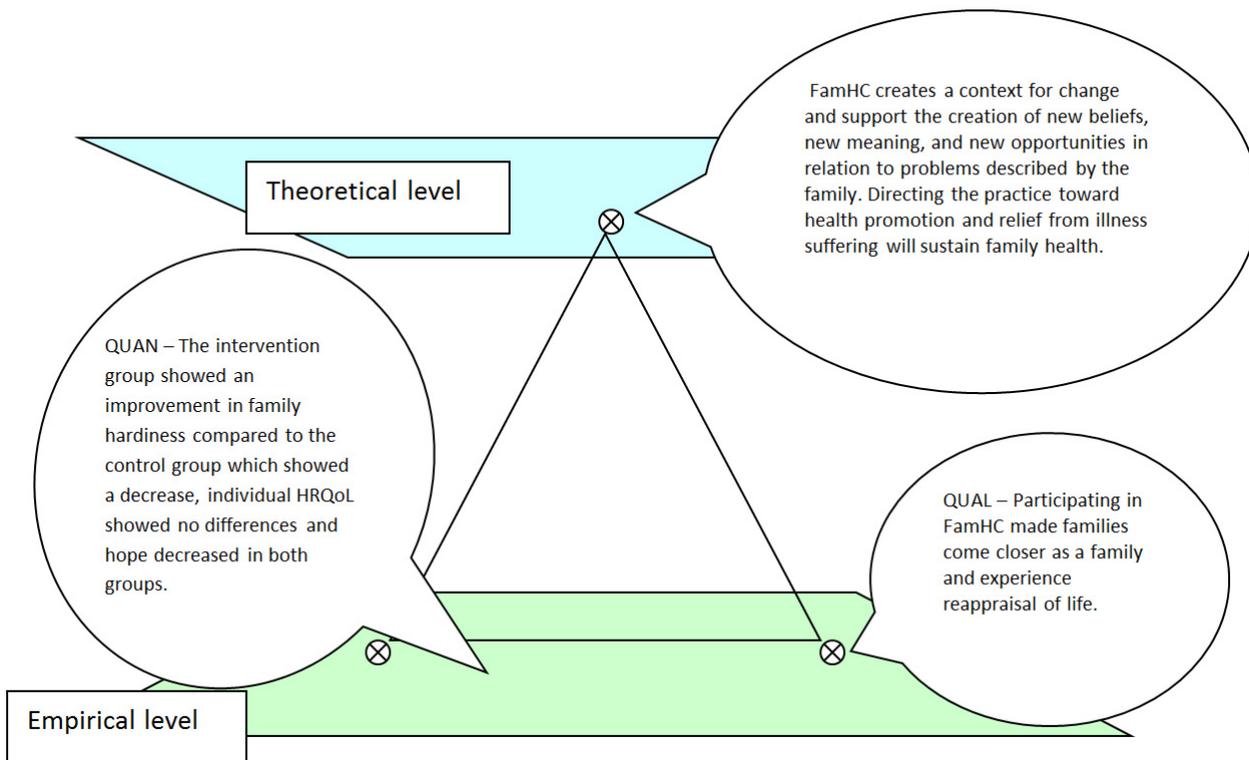


Figure 2. Triangulation diagram of the logical relationship between the theoretical proposition, the qualitative findings from the intervention group and the quantitative data from both groups

From the theoretical proposition, it is suggested that FamHC will sustain family health. The health of the whole family system was deductively tested with measures of Family Hardiness (FHI) representing the general atmosphere of the interaction of the family. The quantitative result supported the theoretical proposition. The intervention group showed an improvement in FHI total score and the subscales measuring Commitment, i.e. the family’s sense of its internal strengths, dependability and ability to work together, and Confidence, i.e. the family’s sense of being able to plan ahead, being appreciated for their efforts and ability to work

together, when compared to the control group. Qualitative findings supported these results in that the families described how they had come closer together and become more cooperative. Their communication within the family had improved and they had become better at sharing responsibilities. They furthermore described how they had become more confident as regards the illness and their situation and also when setting about the future.

Even if the quantitative results indicated an overall advantageous effect of FamHc, i.e. the positive values of the effect sizes, statistical significance was not shown for all sub-scales

of FHI. Control, i.e. the family's sense of being in control of family life rather than shaped by outside circumstances, and Challenge, i.e. the family's efforts to be innovative, to experience new things and to learn, showed no significant differences in change between the intervention and the control group. Even if statistical significance was not shown for these sub-scales of FHI, the quantitative results indicated an overall advantageous effect of FamHC, i.e. the positive values of the effect sizes. However, in regard to Control, the qualitative findings may support the non-significant results, as the families did not describe experiences of control. In regard to Challenge, the qualitative findings can, instead, be seen to support this positive trend. The families described a willingness to learn in terms of thinking in new ways and creating a balance in life. The health of individual family members was deductively tested by measuring each person's health related quality of life, and the results showed no differences in change. No responses in the qualitative findings were interpreted as being about an individual family member's health.

From the theoretical proposition, it is further suggested that FamHC creates a context for change and support the creation of new beliefs, new meaning, and new opportunities for family health. This was supported from qualitative data. The families described how they had changed in how they communicated and acted towards each other. They had started to think in new ways and to change how they were thinking they could live their lives. They could see new opportunities in how to deal with their situation and continue with their lives using both internal and external resources. New beliefs have entered into their ways of thinking. However, descriptions regarding new meanings are scarce in the results. Measures of hope showed a decrease in both groups, and from the qualitative data no explicit descriptions of hope or changes of hope in any directions were found.

4. DISCUSSION

The aim of this mixed methods study was to evaluate effects and responses of FamHC in families with a member under the age of 65 diagnosed with stroke. The results showed benefits for the families who participated in FamHC. When integrating the empirical results and the theoretical proposition, qualitative and quantitative data on the empirical level were mainly convergent and partly complementary to each other, and as such supportive for the proposition on the theoretical level. Consequently, the theoretical proposition seems to be valid for the intervention outcomes in families in which a family member suffered a stroke.

Interventions within the context of family systems nursing have been emphasized to have the purpose of promoting,

maintaining and restoring the health of families.^[56,57] The theoretical proposition in our study proposes that family health will be sustained. Family health can be understood as including both health aspects of individual family members and the health of the family system, i.e. well-being and functioning.^[57-59]

A change in family members' behaviour as regards health was seen in our study. Our integrated results showed no real improvements from this intervention one month post-intervention, on individual family members' health. Other studies on family nursing interventions^[60] have, however, showed such improvements. Moreover, participating in family systems nursing intervention^[24] have shown improvements in individuals' emotional well-being in terms of bringing personal relief and experiencing positive feelings. To understand our results, it might be that individual health is not typically affected by participating in FamHC in such a short time span as only one month after completion of the intervention. In another study in the context residential home for older people conducted six months after families participated in FamHC,^[31] measures of health-related quality of life showed increased emotional well-being in family members and decreased negative affect, in form of sensations of anxiety, sadness, nervousness, and tension. This could be interpreted, as there presumably needs to be several months for the families' improved functioning to show in a positive individual health change. However, FamHC is a complex intervention, and the sample in the present study is relatively small for the quantitative analysis, which is why it is hazardous to draw strong conclusions about the non-significance of some scales with positive effect sizes and rather small *p*-values.

A positive change in family health is, on the other hand, clearly visible in our integrated results, as families described seeing upon future with confidence and creating balance in life, and that the general atmosphere of the family interaction, improved after the intervention as they had come closer together. Persson and Benzein^[29] have further illustrated participating in FamHC as a spiral movement towards family health. From verbal interaction, self and identity within the family is constituted, and an understanding of ways of being and interacting will emerge. In their study, new possibilities can be seen leading to families developing meaning and hope and finally to family health. In our study, creation of new meaning is stated in the theoretical proposition but meaning is not apparent in the qualitative data and not measured quantitatively. However, in interpreting the results from the spiral movement towards family health suggested by Persson and Benzein^[29] our results can be understood as a potential for families to develop hope and meaning in the future.

However, hope in our study after only one-month post-intervention showed a decrease in both the intervention and control group based on the quantitative data and from the qualitative data no descriptions of hope or changes of hope in any directions were described. Bäckström and Sundin^[19] have previously showed that for family members to middle-aged persons with stroke one month after homecoming, life turned out to be a struggle with overwhelming feelings, similar to those in our study. But six month after homecoming, they^[14] showed within the same population that the family members still struggled for control and a renewal of the family and but had also begun to experience a life in the shadow of hope. However, when Benzein et al.^[25] evaluated 5 to 10 weeks post-intervention how families (half of the families in the sample had a family member who had suffered a stroke) had experienced participating in FamHC, they described the families finding hope in the future as part of their healing experience of the intervention. They interpreted this as the fact that telling the story opened up for hope in the family. Experiences from the FamHC in the same sample as in the present study^[28] have shown that room for narratives and deeper conversations were created within the conversations so in that sense the potential for families to develop hope is there. In the qualitative findings in the present study, even if not talking explicitly about hope, a reappraisal of life was found. The families had started to think in new ways including seeing new alternatives for life and how to cope with their situation. Moreover, they looked confident about the future.

In the present study, the family function had improved. They had started to work better together becoming more cooperative and sharing responsibilities. This is in line with evidence from other studies on family systems nursing interventions, showing that not just families' behaviours changed towards a context in which they cared more for each other. A change in the affective domain of family health was also found as they cared more about each other and the family.^[24] Families' communications had in our study also improved; this may probably be one reason for their new ways of functioning and thinking. When participating in FamHC, an atmosphere was created for trust in which all family members dared to talk and in which multiple realities were accepted. Moreover, there was room for creating confirmation.^[28] It might be that these new and positive ways of communicating were kept in their own dialogues within the family after the intervention was concluded. Also, Dorell et al.^[26] have shown within the context of residential care, that one month after participating in FamHC there was an increase in the communication within the family. An increased quality in family communications has also been found in other studies on family systems

nursing interventions.^[24]

It is evident in the empirical integrated results and in line with the theoretical proposition that participating in the intervention had created a context for change for the families. Families in the intervention group had changed how they acted towards each other. They had also changed their ways of thinking. The results can further be interpreted that using internal and external resources they had developed new beliefs and opened up new opportunities for how to deal with their life-situation. Core components when conducting FamHC include challenging family beliefs and, by giving commendations, families' strengths and resources were made visible.^[35] The present results support FamHC being a successful practice.

Some aspects of our study showing divergent results or not supporting the theoretical proposition are interesting to discuss further. As regards Challenge, the qualitative findings can be interpreted as diverging from the quantitative. The families described a willingness to learn in terms of thinking in new ways and creating balance in life. The subscale Challenge (that measures the family's efforts to be innovative, to experience new things and learn), however, did not show a significant difference. The subscale Control (the families' sense of being in control over family life rather than being shaped by outside circumstances) showed no difference in change between the intervention and control groups. In a way, this can be seen as supported by the qualitative findings, as the families did not describe a sense of control. However, families described, for example, how they now dealt with their situation together; activities had been adapted to the new level of functioning and they felt more confident in dealing with the illness in line with how control is defined in the subscale. Previous studies of family systems nursing interventions^[24] found qualitative findings in line with our study, with families reporting increased capability related to a life with illness, including controlling problems, and being capable of managing changes and challenges. In the study of Benzein et al.,^[25] families also described experiencing a sense of control after they had participated in a FamHC intervention. As regards the quantitative results in our study not reaching significance in differences on the Control subscale, difficulties in the interpretation of its scores might be a reason. This uncertainty of the subscale is also revealed in a recent validation study of the Swedish version of the FHI^[43] where the Control subscale was shown to lack some important psychometric properties and where a four-factor scale excluding the Control subscale seemed to support a more solid factor structure.

Methodological considerations

We conducted a mixed methods research study as quantitative and qualitative approaches, respectively, add different strengths to the understanding of outcomes of a complex intervention such as FamHC. When mixing methods, appropriate design components need to be accomplished for both qualitative and quantitative methods used to add quality to data to be integrated and subsequently the integrated results.^[61] In our study, the numbers of participants might be questioned as not being enough for the quantitative part, and one might question the fact that the intervention and control groups were not equivalent at base-line. This was, however, handled in the statistics. The instruments used have previously been shown to be valid, which is supposed to add strengths to the design. It can be questioned whether these instruments are appropriate to measure “family health”. However, there was a lack of instruments available in Swedish, so the ones used were considered most appropriate when the study was designed. Moreover, the concept of family health, when defined, has been described in various ways^[59,62] making it difficult to conclude on the instruments’ concept validity. These aspects might have affected how the quantitative result was able to deductively capture effects of the FamHC as articulated in the theoretical proposition. For the qualitative part, we argue that an appropriate method was used to describe responses after participating in FamHC. To strengthen its trustworthiness,^[40] two of the researchers performed the content analysis, and one of them audited and confirmed the relevance of the categories. When conducting the analysis, they were not aware of the quantitative results.

The use of integrated writing has been suggested when reporting mixed methods projects showing the integration of the two data sets and the interpretation between these components^[63] and the theoretical propositions, which we aimed to accomplish. Yet, one difficulty in this study, is that this is not yet common in published studies, giving limited guidance on how to present such an integration in a clear way. However, using triangulation as a methodological metaphor^[54] forced us to explicitly state the theoretical propositions of the intervention to be evaluated.^[56] This methodological measure further facilitated the integration of qualitative and quantitative findings, equally weighted,^[55] originating from a parallel analysis. Transparency about where and how integration between the different data within a study is important so as to allow readers to judge the appropriateness of the integration.^[63] We argue that using triangulation as a methodological metaphor helped illustrate the links between

theory and empirical findings and clarify what data the integrated results are based on, and consequently added to the trustworthiness/validity of the study results.

5. CONCLUSIONS

Based on the empirical results supporting the theoretical proposition underlying the family systems nursing intervention FamHC, we conclude that it works as intended. Intervening with a systemic intention is logical when family health is the subject of change. In this study, the population consisted of families with a family member who had suffered a stroke, but FamHC can be suggested also to work for other families experiencing long-term illnesses. The evidence for the theoretical proposition is thereby strengthened, and we found no reasons to change or further develop the proposition based on this study. Family systems nursing interventions have been used internationally to support families suffering different kinds of long-lasting illnesses. The evidence base for its benefits is now quite convincing, but further empirical, well-conducted studies in different contexts would be beneficial. However, with the available evidence, we suggest RNs and Advanced Practice Nurses consider working to change their practice so as to work with the family as a system when supporting individuals and their families living with ill-health and to implement FamHC as one way for such supportive work.

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ETHICAL APPROVAL

The study was approved by the heads of the rehabilitation clinics at which the informants were recruited, and ethical approval was obtained from the Regional Ethical Review Board in Umeå, Sweden (No 210-101-31M).

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CONFLICTS OF INTEREST DISCLOSURE

None declared.

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