

**DISTAL RADIUS FRACTURE AND FAMILY ROLE RESPONSIBILITIES:
PATIENTS' PERCEPTIONS OF THEIR PARTNERS' CONTRIBUTIONS TO
FAMILY ROLE RESPONSIBILITIES DURING THE EARLY RECOVERY**

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PATIENTS' PERCEPTIONS OF THEIR PARTNERS' CONTRIBUTIONS TO FAMILY

ROLE RESPONSIBILITIES DURING THE EARLY RECOVERY

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Lay Abstract

Distal radius fracture is a common wrist injury, causing pain, movement restriction, difficulties with daily living activities, and frustration. This injury often happens in women after menopause because their bones have become weaker. Some people will need to have surgery for a distal radius fracture, but many will need to wear a cast instead. To regain wrist function and muscle strength, people should do therapy after their fracture. But just doing exercises is not enough: it is very important to think about how they will manage everyday life activities and get the help they need while they recover.

The goal of this dissertation is to discover partners' roles to provide help for patients in family role responsibilities after a distal radius fracture. We also found different strategies may be used to reduce hardships during the first two weeks of recovery. Finally, there were differences between men and women to receive/seek help from their partners. Women required physical and emotional support while men did not seek strong emotional support.

Abstract

Background: Distal radius fracture is a prevalent upper extremity injury. Exploring partners' role in providing support from the patients' perspective may influence the experience of recovery following this injury. Moreover, describing coping strategies applied by patients and their partners to complete their family role responsibilities can promote recovery outcomes.

Objectives: The objective of this research is to explore: the lived experiences of patients with distal radius fracture and their perspective on their partners' contribution to completing family role responsibilities during their recovery; implemented coping strategies, and analyze their perspectives through a sex and gender lens.

Methods: A Semi-structured interview was conducted with persons in the acute recovery stage following a distal radius fracture who had partners. We recorded, transcribed, coded, and thematically analyzed twelve interviews. A process of constant comparison was applied until data saturation occurred. Trustworthiness techniques were used in data analysis and included peer reviews.

Results: The interviews with twelve persons with distal radius fracture reflected six themes. Four themes emerged with respect to the partners' contribution to providing support for patients in: 1) the emergency time after the fracture; 2) physical family chores; 3) social and recreational activities, and 4) emotional support. The fifth theme described that person with DRF valued diverse support; informational support from health professionals was demanding and necessary from the person's perspective. The sixth theme informed different coping strategies applied to minimize the physical and emotional burdens of the fracture. The impact of gender on the pattern of seeking/receiving social support was discussed as the

secondary purpose of this study; women required instrumental and emotional support while the emotional status of men did not affect by distal radius fracture. However, this finding of gender differences is required more future investigation.

Conclusion: Multiple social support provided by partners to persons with a distal radius fracture to complete family roles were highlighted through patients' perspectives. Also, implemented coping strategies within families were explored. However, partners' perspectives and experiences are required to promote our knowledge of patients' and their partners' needs to complete family roles during the early recovery.

Acknowledgements

First, I would like to express my gratitude to my amazing supervisor, Dr. Joy C MacDermid for giving me the opportunity to do my Master's of Rehabilitation Sciences. Your encouragement, support, and guidance helped me to enter the research world which I had never imagined before. You are more than an academic supervisor to me. I have learned how to be a better person with your incredible personality; I am deeply grateful.

I also want to thank my supervisory committee, Dr. Evelyne Durocher, and Dr. Tara Packham for your wonderful assistance and feedback throughout my study. Thank you for your motivation and patience.

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I would like to thank Margaret Lomotan at McMaster University for her continuous and excellent support to manage the meetings, especially throughout the pandemic. Also, Christina Ziebart for accepting to be the second author, and Hoda Seens to share her idea for conducting this research.

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List of Abbreviations

| | |
|-----------|---|
| DRF | Distal Radius Fracture |
| FOOSH | Falling on an Outstretched Hand |
| CRPS | Complex Regional Pain Syndrome |
| ORIF | Open Reduction with Internal Fixation |
| OP | Osteoporosis |
| WHO | World Health Organization |
| ICF | International Classification of Functioning, Disability, and Health |
| CIHR | Canadian Institutes of Health Research |
| FDA | Food and Drug Administration |
| SAGER | Sex and Gender Equity in Research |
| EASE | European Association of Science Editors |
| 2-Way SSS | 2-Way Social Support Scale |
| MI | Myocardial Infraction |
| ADL | Activities of Daily Living |
| HRQOL | Health-Related Quality of Life |
| CAD | Coronary Artery Disease |
| LOI | Letter of Information |
| HULC | Hand and Upper Limb Clinic |
| TBI | Traumatic Brain Injury |
| PCS | Catastrophic Scales |
| PASS | Pain Anxiety Symptom Scales |
| MHQ | Michigan Hand Questionnaire |

Declaration of Academic Achievement

Sahar Saeidi is the primary author and contributor of this thesis. She joined a research team conducting a mixed-method study of DRF in April 2021 and contributed to reaching the amendment for the ethics approval. She was responsible for the qualitative part of the study consisting of recruiting participants, providing informed consent, conducting interviews, data extraction, analysis, interpretation, drafting the manuscript, and incorporating feedback. Dr. Joy MacDermid was the thesis supervisor, responsible for reviewing the research questions, interview guide, study design, and manuscript. Christina Ziebart contributed to the data analysis as the second author, and Hoda Seens developed the initial idea of this study and applied for ethics approval for the first time. Both provided feedback on the manuscript. The supervisory committee, Dr. Durocher and Dr. Packham, provided guidance and input during the committee meetings and reviewed the manuscript. They both helped in developing the interview guide by providing insights.

Chapter One:

Introduction to Distal Radius Fracture and Literature Review

1.1 Etiology of Distal Radius Fracture

The radius is the most site of fracture in long bones [1]. Distal Radius Fracture (DRF) is a prevalent wrist injury that occurs by a mechanism of an axial force across the wrist with the pattern of injury determined by bone density, the position of the wrist, and the magnitude and direction of force [2]. Most DRFs result from a fall on an outstretched hand (FOOSH) with the wrist extended and pronated [2, 3]. DRF in older adults is often the result of low-energy falls from standing or seated positions [4,5]. In contrast, DRF is more frequent among children and adolescents as the result of high-energy falls during sports events, motor vehicle accidents, and play [6,7].

The term “distal radius fracture” is used for any fracture of the radius that occurs close to the wrist [8]. There are various types of DRF with different mechanisms of injury and different managements [8]. The most common DRFs are 1) Colle’s, a fracture with dorsal displacement; 2) Smith or a reverse Colle’s, a fracture with volar displacement; 3) Barton, a fracture with radiocarpal dislocation; 3) Chauffeur’s, a fracture with radial styloid avulsion; 4) Die-Punch, a fracture of the lunate facet of radius; 5) Galeazzi, a fracture with distal radioulnar dislocation; 6) Greenstick, a fracture of distal radius metaphysis; and 7) Salter-Harris, a fracture of distal radius epiphyseal plate [3, 6, 7, 9, 10].

A DRF can result in acute wrist pain and swelling, deformed wrist or forearm, tenderness, painful range of motion, ecchymosis, and if left untreated could result in significant morbidity [7]. Although simple DRFs usually heal well with no long-term complications, persons with complex DRFs may face numerous complications [8]. These complications which may arise during the management of this fracture are categorized as 1)

immediate complication including nerve injury, compartment syndrome, and skin injury; 2) early complication (< 6 weeks) including loss of reduction, tendon rupture, joint stiffness, and infection; and 3) late complication (> 6 weeks) such as malunion, delayed/non-union, Complex Regional Pain Syndrome (CRPS), and arthritis [11, 12]. The treating surgeon must be aware of the possible complications associated with DRF treatment to prevent their occurrence [13].

1.2 DRF Risk Factors

Although the mechanism of DRF is well-documented (significantly fall-related) [2, 3], several risk factors have been identified that contribute to the onset of DRF. Decreased bone mineral density, female gender, white race, family history, and early menopause are the main risk factors for DRF among elders [7]. A recent literature review suggested other risk factors contribute to DRF such as age, sex and gender, lifestyle, population density, and seasonal factors [14]. This study emphasized that health conditions including diabetes, osteoporosis, rheumatoid arthritis, and kidney diseases which result in poor bone quality should also be considered as DRF risk factors [14]. Cognitive dysfunction, specifically dementia, is another risk factor in patients older than 75 years old [5, 14, 15]. Similarly, a literature synthesis of factors predicting DRF has confirmed that the risk of DRF is determined by both personal factors (age, sex/gender, lifestyle, health condition) and environmental factors (population density, climate) [16].

1.3 DRF Epidemiology and Burden

DRF is the most common fracture of the upper extremity [2], accounting for more than 640,000 cases reported during 2001 in the United States alone [16] with an increasing

worldwide incidence [5, 14, 17, 18, 19]. In Canada, 25,355 cases reported in Ontario among individuals 18 years and older in 2013, with the incidence rate of 2.3 per 1000 and 2.7 per 1000 persons among individuals 35 years and older, respectively [20]. DRF comprises 74.5 percent of all forearm fractures [21] and accounts for approximately 18 percent of all adult fractures [22]. DRF contributes to one-sixth of fractures treated in emergency visits [1, 23]. This fracture can occur at any age. However, children aged less than 18 years old, and adults of age older than 50 years old sustain more DRFs compared to middle-aged adults [24]. Also, sex is a determinant of DRF; boys, middle-aged men (19-49), and women older than 50 years have a higher incidence of DRF [22, 25, 26].

The high incidence rate of DRFs carries a large economic burden in older adults alone, with an estimated Medicare system expenditure of \$385 to \$535 million annually in the USA in the period from 2005 to 2025 [27, 28]. Historically, closed reduction including casting or limited percutaneous fixation has been considered an inexpensive treatment for DRF [2]. However, the popularity and rate of successful surgical intervention (internal fixation) for DRF have increased in recent years [29]. In 2007, management of each DRF cost nearly \$2000 per patient, with surgical intervention costing nearly three times that of closed management [29, 30, 31]. Therefore, the high rate of DRFs in older adults and the higher cost of surgery compared to close reduction can imply a significant increase in Medicare expenditures [31]. In addition, patients are suggested to have weekly radiographs for three weeks following reduction or during immobilization, based on the American Academy of Orthopedic Surgeons (AAOS) guidelines [32]. Therefore, loss of productivity and having one or more pay-offs (to attend follow-ups or rest based on restricted activities

prescription from physicians) should consider as other aspects of the economic burden associated with DRF [2].

Physical impacts associated with DRF include impairments in forearm rotation, wrist movements restriction, grip strength reduction, and sensory deficits [33,34]. Moreover, DRF can have emotional impacts such as frustration, difficulty sleeping, depression, and anxiety [35]. Difficulties with Activities of Daily Living (ADL) and frustration are the main complaints among patients having sustained a DRF [35].

1.4 DRF Management

Various non-surgical and surgical treatment options exist for DRF based on the fracture pattern, injury mechanism, soft tissue injury, patient characteristics, and surgeon preferences [36]. Non-surgical techniques include closed reduction with an initial splint or cast immobilization for five weeks may follow by radiographs to monitor the fracture alignment [36, 37]. Surgical techniques include closed reduction with percutaneous pinning, external fixation, dorsal plating, and Open Reduction with Internal Fixation (ORIF) using volar/dorsal fixation [36].

Rehabilitation is a mandatory part of the total management after DRF with the increased risk of impairments [38]. Restoration of wrist function and reduction of impairments are the main goals of rehabilitation programme and have a direct influence on the quality of life and duration of sick leave [38]. A rehabilitation program comprises one or more interventions based on the physiotherapist's decision about practice [39]. This decision is supported by a thorough assessment of patient's presenting problems, physiotherapists' knowledge about the effectiveness of interventions [39], patients' characteristics, and their

preferences [40]. Health models like ICF can facilitate this evidence-based practice to promote understanding the patient as a person and their problems. As this model is holistic and patient-centered, patient characteristics are likely influential to find an appropriate intervention used in rehabilitation [41].

1.5 DRF Rehabilitation

DRF rehabilitation is focused on pain management, regaining active range of motion, muscle strength, function [42], and preventing complications secondary to immobilization [43]. Control of pain and edema, maintenance of ROM of uninvolved joints, and wound care are the main focuses of rehabilitation during the immobilization phase after a DRF [42]. However, a practice pattern survey completed by therapists shows that less than 10% of patients with DRF get a referral to rehabilitation services, such as physiotherapy or hand therapy, during the period of immobilization [42]. Of these patients, 39% are included in a home exercise program. Shoulder, elbow, and digital ROM exercise and compressive wrap are used by more than 75% therapists. Moreover, almost 50% of therapists use manual exercise and heat/cold modalities (for edema control, increase ROM, and reduction of stiffness), and resting splint (for support and protection) [42].

Optimal strength, range of motion, and function are achieved within 3 to 6 months regardless of conservative management or surgical intervention [44]. However, a cross-sectional survey presented that 16% of individuals report ongoing pain and disability one year after DRF [45], and complications such as hand stiffness, malunion, Complex Regional Pain Syndrome (CRPS), and delayed return to work may prolong the rehabilitation phase [46, 47]. Clinical outcome measures after DRF traditionally focus on objective criteria such

as range of motion and grip strength [48]. However, patients' interests are in their ability to complete everyday functional activities [48]. Therefore, it is critical to address everyday life activities in designing rehabilitation programs or engaging needed social supports. This can fill the gap between theory (focused on pain and ROM) and practice (focused on daily activity) in the DRF rehabilitation programs.

Furthermore, declining bone mineral density (osteoporosis) is a risk factor in 70% to 80% of individuals with a DRF. These patients have a 3.3-fold increase in sustaining future wrist fracture, a 5-fold increase in vertebral fracture, and a 2-fold increase in hip fracture [50, 51, 52, 53]. Therefore, including daily activities in rehabilitation protocol is a strong driver for the rehabilitation process, mental wellbeing, and habituation [54]. A therapist should understand all risk factors contributing to DRF (Age, Sex, Gender, and Lifestyle) and prognostic factors (Age, Sex, Gender, Bone health, Pain, Disability, Work compensation, and Socioeconomic level) in order to provide optimal rehabilitation, comprehensive evaluation, and educational strategies [16].

1.6 DRF and Unpaid Housework

Housework comprises the sum of all physical (e.g., meal preparation, cleaning, clothing, doing laundry, vehicle maintenance, childcare, and family earnings) and emotional tasks performed by family members to maintain the daily life of those who have responsibility for [55].

Everyday life can become troublesome following DRF in activities such as sports or work (when individuals use their hands), or even when they rest [56]. Patients with DRF often express experiencing more difficulties in performing household duties than personal care, specifically during the first three months following the injury due to having pain and

disability [57, 58]. The recovery process after DRF presents mild symptoms within three months after fracture [55], and after six months there should be minimal disability [59]. Therefore, the first three months can be considered the most important time during which to provide support for optimal recovery. Additionally, a semi-structured interviews with individuals one year after DRF revealed that recovery can have a positive impact on social relationships (e.g., becoming independence from others or less irritation between spouses related to the increased ability) and wellbeing (e.g., sense of satisfaction because of having a functional wrist or being able to manage ordinary things) [60].

The World Health Organization's (WHO) International Classification of Functioning, Disability, and Health (ICF) [61], provides a conceptual framework through which one can better understand and describe factors affecting health conditions. In this framework, functioning and disability are multidirectional concepts relating to Activity, Body structure and Function, and Contextual factors [61]. *Activity* is the execution of a task or an action by individuals and, any difficulties an individual may face with executing the activity is defined as an *activity limitation*. Also, *Participation* is defined as any involvement in a life situation and *participation restrictions* are challenges that may be encountered in that life situation [61]. A strong emphasis is placed in the ICF on the ability to do tasks of daily life. *Domestic life* is a chapter in the activity and participation domain. This chapter lists a hierarchical set of codes related to the acquisition of necessities, completion of household tasks (preparing meals and doing housework), the care for household objects and others, as well as other unspecified aspects of domestic life.

Another domain in the ICF framework is the *contextual factors* affecting health conditions, which comprise *environmental* and *personal factors*. Personal factors are not

coded in the ICF classification system due to the wide variability in these factors (including sex, gender, age, race, educational level, and etc.). However, these factors are included in the framework as they may have an influence on a person’s function [61]. Environmental factors are external to a person and can be either facilitators or barriers to a health condition. The environmental factors are related to support and interpersonal relationships, which also cross over into family role responsibilities [61] (Figure 1.1).

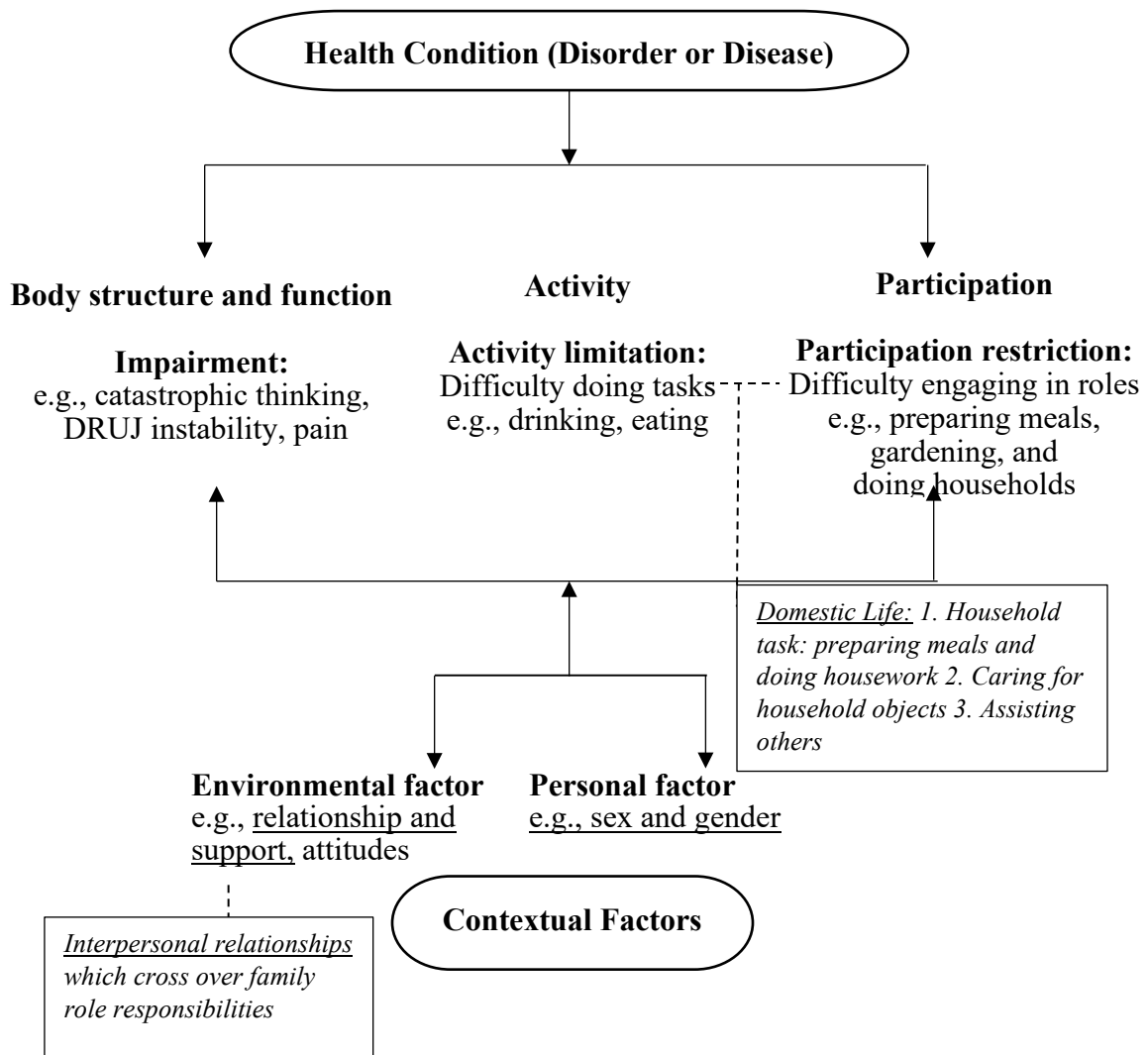


Figure 1.1 ICF model applied to distal radius fracture for defining the Household tasks, Support and Relationship

Reviewing ICF framework in this chapter is aimed to describe the theoretical relationship between different concepts of our research including: 1) family roles, as the activity and participation domains of the ICF; 2) sex and gender, as personal factors in the contextual domain of the ICF; and 3) social support, as environmental factors of the ICF contextual domain. This framework will also help us to think about how the relationship between family roles, sex and gender, and social support may influence recovery following a DRF. All concepts of this research will be discussed below.

1.7 Introduction to the Social Support

Although there are various definitions of social support in the literature, common characteristics can be found among these definitions; many definitions include some type of positive interaction or helpful behaviour provided to a person in need of support [62]. Social support has two main aspects:

1. *Structure of social support*: is related to the number of social relationships an individual has and the frequency of contact with that network [63]. There is a positive relationship between the level of social network and physical health outcomes [64]. For example, a prospective cohort study on women with invasive breast cancer in US showed that women who reported very few social contacts (they were socially isolated) had significantly lower physical and emotional well-being scores and higher breast cancer symptoms, compared with socially integrated women [65].
2. *Function of social support*: refers to the specific function perceived to be available. Function of social support has four categories including instrumental (tangible assistance like driving or cooking), emotional (non-tangible assistance like a sense of

self-worth), informational (advice), and companionship or appraisal (social belonging) supports [63, 66, 67]. The effect of the function of social support on physical and psychological status is similar to those found with the structural support (positive relationship) [68, 69].

There are factors that can influence social support. Firstly, social support may be received from a variety of sources including family, friends, partners, and coworkers [70]. These sources are considered a significant determinant of the effectiveness of support. For instance, support from a partner is associated with health benefits, particularly for men [71]. Furthermore, gender differences are another factor influencing social support [72].

1.8 DRF and Sex and Gender

According to the Canadian Institutes of Health Research (CIHR), sex and gender have different meanings [73]. Sex refers to biological traits such as gene expression, hormone levels and function, and reproductive/sexual anatomy. Sex is usually categorized as female or male, although it is not binary and intersex people are a small percentage of a population. Gender refers to socially constructed roles, behaviours, expressions, and identities of girls, women, boys, men, and gender-diverse people; gender is how people perceive themselves and others and how they act and interact in society [73].

Gender and sex differences exist among patients with a DRF; males have a higher incidence of DRF in the 0–19-year age group and females have a higher incidence in the 40–64-year age group [22, 25, 26]. DRF is also more common among women than men ages > 65 [74]. Females between 60 to 94 years of age are 6.2 times more likely to sustain a distal radius fracture than men in the same age group [75].

Science and medicine have a long history of systematically neglecting half of the population. For centuries studies were conducted on men and assumed that the results could apply with uniformity to women. As such, women have received inequitable treatment of health problems across a wide spectrum of health (e.g., reproductive, infectious diseases, depression) [76]. Gender imbalances in research may be resulted in partial approaches to women's and men's health needs and lack of recognition of the interaction between gender and other social factors [76]. Increasing evidence suggests a significant difference between men and women in the incidence of disease (e.g., higher incidence of osteoarthritis among women and stroke among men) [77] and response to treatment [78]. These differences are due to sex as well as gender [77].

According to the 2007-2009 Canadian Health Measures Survey, musculoskeletal fitness has significant health benefits, especially for women and older adults. These benefits include increased mobility, less functional impairment, more independence, reduced risk of falls, lower pain levels, decreased mortality, and improved quality of life [79]. Musculoskeletal health is an area in which effects of sex and gender can significantly influence treatment and outcomes. Musculoskeletal problems such as osteoarthritis, osteoporosis, and fractures are more prevalent among females [80].

Some specific sex differences between males and females affect musculoskeletal health and are essential in acquiring and recovering from DRFs. These sex differences include differences in bone remodeling and the characteristics of a fall. Females aged 50-64 years are more likely to fall on their hands, while males, in the same age group, are more likely to fall sideways and less likely to fall forwards on their hands. This variation in fall type by age and sex is clinically important that may explain patterns of occurrence of hip

fracture and Colle's' fracture [81]. Both bone modeling (during development) and bone remodeling (throughout a person's life) determine bone strength. These processes are dependent on the work of both bone-forming cells (osteoblasts) and bone-resorbing cells (osteoclasts). How these cells respond to mechanical signals and biomechanical load may be due to the modulating role of estrogen [80], a predominately female sex hormone.

1.9 Sex and Gender in Research

According to CIHR, biological and social differences between men, women, girls, boys, and gender-diverse people contribute to differences in their health. Sex and gender influence the risk of developing certain diseases, how we respond to medical treatments, and how often we seek healthcare [73]. Although sex and gender are important determinants of health and well-being, they are often overlooked in research design, study implementation, and scientific reporting [82]. Therefore, the generalization of research findings and their clinical application to everyone will be limited [73, 82]. While the term “gender gap” is mostly applied to women, the role of sex and gender-based analysis is also vital for a better understanding of men's health [83]. Lack of interest in sex and gender differences may not only be harmful but also can prevent the development of innovative approaches and appropriate solutions to meet the needs of society [82]. For example, half a dose of zolpidem (used for insomnia) is recommended for women by US Food and Drug Administration (FDA) due to the greater harmful risk of the drug among women compared to men [84].

Despite the importance of sex and gender consideration in most areas of research, the quality of publications related to sex and gender has been a cause of concern for several years. Therefore, the lack of detailed guidelines for preparing the manuscript (for authors) and quality assessment (for editors) led to the implementation of the Sex and Gender Equity

in Research (SAGER) guidelines [82]. These guidelines were published in 2016 by the European Association of Science Editors (EASE) to promote systematic reporting of sex and gender in research [82]. This guideline is a tool to standardize sex and gender reporting in scientific publications whenever appropriate and to advance knowledge about sex and gender specifically in medical research [82]. Table 1.1 presents the SAGER guidelines which apply to all research with humans, animals, or any materials originating from humans and animals (e.g., organs or cells), as well as other disciplines whose results will apply to humans such as mechanics or engineering. However, not all of the items in the SAGER guidelines need to be done, as suggested by the indication “if appropriate”. In addition, Table 1.2 provides a set of questions that can use as a basis for the preparation of a manuscript for submission to raise awareness among authors. SAGER guidelines provide a list of questions that could be used to guide the initial screening of the submitted manuscript (Figure 1.2).

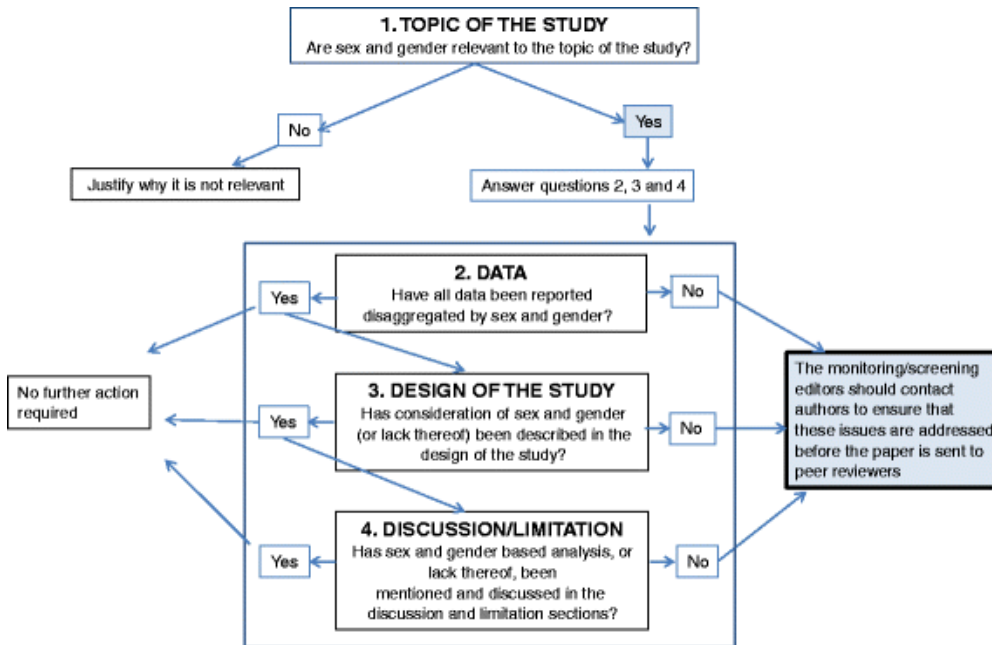
Table.1.1 Sex and Gender Equity in Research (SAGER) guidelines

| |
|--|
| General principles |
| <ul style="list-style-type: none"> • Authors should use the terms sex and gender carefully in order to avoid confusing both terms. |
| <ul style="list-style-type: none"> • Where the subjects of research comprise organisms capable of differentiation by sex, the research should be designed and conducted in a way that can reveal sex-related differences in the results, even if these were not initially expected. |
| <ul style="list-style-type: none"> • Where subjects can also be differentiated by gender (shaped by social and cultural circumstances), the research should be conducted similarly at this additional level of distinction. |
| Recommendations per section of the article |
| Title and abstract: If only one sex is included in the study, or if the results of the study are to be applied to only one sex or gender, the title and the abstract should specify the sex of animals or any cells, tissues and other material derived from these and the sex and gender of human participants. |
| Introduction: Authors should report, where relevant, whether sex and/or gender differences may be expected. |
| Methods: Authors should report how sex and gender were taken into account in the design of the study, whether they ensured adequate representation of males and females, and justify the reasons for any exclusion of males or females. |
| Results: Where appropriate, data should be routinely presented disaggregated by sex and gender. Sex- and gender-based analyses should be reported regardless of positive or negative outcome. In clinical trials, data on withdrawals and dropouts should also be reported disaggregated by sex. |
| Discussion: The potential implications of sex and gender on the study results and analyses should be discussed. If a sex and gender analysis was not conducted, the rationale should be given. Authors should further discuss the implications of the lack of such analysis on the interpretation of the results. |

Table 1.2 Authors’ checklist for gender-sensitive reporting

| |
|---|
| Research approaches ✓ |
| ✓ Are the concepts of gender and/or sex used in your research project? |
| ✓ If yes, have you explicitly defined the concepts of gender and/or sex? Is it clear what aspects of gender and/or sex are being examined in your study? |
| ✓ If no, do you consider this to be a significant limitation? Given existing knowledge in the relevant literature, are there plausible gender and/or sex factors that should have been considered? If you consider sex and/or gender to be highly relevant to your proposed research, the research design should reflect this |
| Research questions and hypotheses |
| ✓ Does your research question(s) or hypothesis/es make reference to gender and/or sex, or relevant groups or phenomena? (e.g., differences between males and females, differences among women, seeking to understand a gendered phenomenon such as masculinity) |
| Literature review |
| ✓ Does your literature review cite prior studies that support the existence (or lack) of significant differences between women and men, boys and girls, or males and females? |
| ✓ Does your literature review point to the extent to which past research has taken gender or sex into account? |
| Research methods |
| ✓ Is your sample appropriate to capture gender and/or sex-based factors? |
| ✓ Is it possible to collect data that are disaggregated by sex and/or gender? |
| ✓ Are the inclusion and exclusion criteria well justified with respect to sex and/or gender? (Note: this pertains to human and animal subjects and biological systems that are not whole organisms) |
| ✓ Is the data collection method proposed in your study appropriate for investigation of sex and/or gender? |
| ✓ Is your analytic approach appropriate and rigorous enough to capture gender and/or sex-based factors? |
| Ethics |
| ✓ Does your study design account for the relevant ethical issues that might have particular significance with respect to gender and/or sex? (e.g., inclusion of pregnant women in clinical trials) |
| Source: Adapted from Canadian Institutes of Health Research |

Figure 1.2 SAGER flowchart guiding editors’ initial screening of submitted manuscripts



1.10 Literature Review

1.10.1 Social Support and Health Promotion

Over the last thirty years, many health researchers have shown significant interest in the phenomenon of social support to improve our understanding of its effects on health [85]. A growing number of studies defined two primary dimensions for social support: emotional support (caring, love, and empathy) and instrumental (or tangible) support [85, 86]. Expanding this view point, the 2-Way Social Support Scale (2-Way SSS) appraises four principal dimensions for social support which assess: (a) giving emotional support (b) receiving emotional support (c) giving instrumental support (d) receiving instrumental support [87]. Both seeking and receiving help from others are forms of coping activity [88, 89]. The role of someone providing service or emotional support can reduce negative consequences of illnesses or stressful conditions [90]. Individuals who receive a high level of social support have better health and well-being [91, 92] and recover faster from diseases [93]. Moreover, a study on social relationship and health suggests that various studies confirm “more socially isolated or less socially integrated individuals are less healthy, psychologically, physically, and more likely to die” [94].

Hip fracture is a common fracture among older women [95], and can result in impaired walking ability and reduced functional status [96]. Longitudinal structured interviews were with women to explore the relationship between social support, depression, and recovery of walking following the hip fracture surgery, in Philadelphia [97]. The initial interviews conducted 7-10 days after the surgery and the follow up interviews conducted at 2- and 6-months post-surgery. The results showed that having a spouse, as a confidant helper,

present greater improvements in functional status in comparison to having a child as a helper during six months of recovery after surgery [97]. Moreover, walking ability and physical recovery were limited by depression in early recovery process. However, change in depression was associated with having adequate support; failure to provide adequate support contributes to depression, walking limitation, and physical function restriction [97].

Structured interviews with individuals who had sustained a Myocardial Infarction (MI), conducted during acute hospitalization, six months, and one year later to examine the relationship between social support and subsequent physical and psychological status [98]. Findings suggested that social support and social relationship may influence the recovery from MI; receiving support (both instrumental and emotional) from one's family was strongly associated with multiple recovery outcomes including functional and psychological constructs when compared with illness severity or pre-illness life [99]. In other words, having family support from someone who is close may reduce depression and anxiety as well as enhance well-being [98].

1.10.2 Social Support and DRF Recovery:

Social support has been described as assistance available to an individual through social ties to others (including family, friends, and community members) [100]. As mentioned above, social support has two main aspects (structure and function) [63]. Function of social support has different categories including instrumental, emotional, informational, and appraisal (companionship-based) supports [63, 66, 67].

Recovery has three main dimensions: 1) affective, defined as restoration of emotional balance which was disturbed; 2) functional, defined as regaining a satisfactory level of

function based on the individual's capability and potential in comparison to that of a healthy person; and 3) cognitive, referring to a realistic understanding of one's condition and acceptance of life as meaningful and purposeful [100, 101, 102]. Since outcomes following DRF are multifactorial [103], the rehabilitation process following DRF should address the psychological, physical, and cognitive function of an individual [47].

Recent prospective research has conducted to investigate relationships between help and support from others and recovery from DRF [104]. This study explained that providing emotional support at baseline is significantly predictive of 4.7% of the variability in patient-reported pain and disability, affecting improved outcomes in one year following DRF [104]. The results showed that psychological factors like depression, anxiety, and stress are associated with pain and disability following DRF [103]. All of these factors can result in disuse of the affected limb and in the extreme case the development of signs and symptoms of Complex Regional Pain Syndrome (CRPS) [103]. The development of proper support and care strategies to improve outcomes during the recovery is significant [103].

A qualitative descriptive analysis of health behaviour and social facilitation after DRF showed that multiple forms and sources of social support were relevant for recovery after a DRF through the lenses of *Social cognitive theory* and *Self-management* [105]. Informational, instrumental, and emotional supports from healthcare professionals and a broader circle (e.g., family, neighbors) can address multidimensional sequelae of injury and support optimal recovery [105]. This may happen since the health promotion is considered as a product of a reciprocal interaction between behaviour, person, and environment with respect to the social cognitive theory [106]. Moreover, self-management that can act through behaviour, social facilitation (environment), and knowledge and beliefs (person) has also

been considered influential in optimizing recovery following a DRF through the patients' perspectives after immobilization [105].

Recovery from DRF must address both impairment (limited motion or sensation) and disability (inability to depend on an injured hand) [107]. Many researchers found that the ability to perform activities of daily living (ADL) is limited right after DRF immobilization [3, 35, 108]. The outcome of 169 fractures of distal radius in individuals (aged < 50), using Patient Evaluation Measured Questionnaire (PEMQ), demonstrated difficulty with every day activities and work, pain, and loss of mobility 18 months post-injury [108]. A semi-structured interview conducted with individuals following wrist disorders in Australia to explore how their wrist disorder has affected their ability to perform daily activity [57]. The results defined a range of functional difficulties which lead to employing various compensatory mechanisms to complete most ADLs [57]. This study indicated that participants had challenges completing tasks related to hygiene (personal care), dressing, feeding, inside/outside domestic duties (sweeping, shoveling), transport, family activities, work (lifting, carrying) and recreational activities. They used three different compensatory mechanisms including requesting help to do that (31%), using other hand (26%) and using other parts of body to lift or grasp (6%). Also, participants used these compensatory mechanisms 96% for work, and 87% and 75% for inside/outside domestic duties, respectively [57]. In addition, a descriptive longitudinal observational study aimed to describe the frequency and type of compensatory mechanism used over a 6-month period following a DRF [109]. The results reported that individuals with DRF use different types and frequency of compensatory mechanisms during six months of recovery after DRF [109]. For example, magnitude of difficulty associated with performing inside domestic ADL (like

preparing food or cleaning) decreased over the time; 40% of inside domestic activities were impossible to perform at 8 weeks post-fracture, compared with 28% at 24 weeks post-fracture. This finding suggests individuals are more likely to use fewer compensatory mechanisms by experiencing fewer difficulties, by the time spent after fracture [109]. In other words, as individuals' status improve over time following the injury (as exemplified by a decrease in pain and increase in movement) [3], compensatory mechanisms may no longer be required for the successful performance of ADL over time [109]. Based on a biomedical guide for rehabilitation after DRF, anatomic alignment following DRF is maintained within 4-8 weeks, good strength is achieved by 8-12 weeks, and complete healing with the remodeling of bone may take 6-12 months [110]. This is important to mention that all these stages in biomedical recovery after DRF can overlap and are determined arbitrarily due to the sequence of callus healing in long bones (inflammation, soft callus, hard callus, and remodeling) [111]. Clinical experts suggests that the goal of therapy is to “assist patients in dealing with their injury using appropriate coping mechanisms and avoidance of patterns that increase the risk of chronic pain/disability syndrome” [112]. Therefore, challenges to performing ADLs and family roles during the early recovery may contribute to seeking/receiving support from others, which may facilitate bone healing and lead to optimizing recovery outcomes.

1.10.3 Sex and Gender in Social Support and Health

Several factors may influence patterns of receiving/giving social supports [113]. First, the type of support received from others may vary based on the nature of challenges and individual personality differences. Second, there are multiple potential sources for obtaining support including spouse or partner, relatives, friends, neighbors, co-workers,

caregivers, and health professionals. People may have different access to such sources or may vary in their comfort with requesting/receiving support from them [114]. Finally, the sex of an individual has historically been reported as an important variable related to the pattern of social support [115]. Although there is empirical evidence that females are more likely than males to provide social support [116, 117], they also consistently report seeking and receiving a higher level of emotional support than males do [118, 119, 120, 121]. In contrast, the result of a more recent study suggests that gender, not sex, is significantly correlated with patterns of social supports [113]. This study focused on the link between social support and gender variables by using a questionnaire survey to test a series of hypothesis about relationship between sex, gender, personality, and social support. According to this study femininity is associated with seeking and receiving emotional support, while masculinity is linked only with receiving tangible support [113].

While some researchers continue to ignore the concept of sex and gender, much work has been done to promote sex and gender-based analysis in health research and to stimulate critical thinking about the effect of sex and gender on health behaviours and outcomes [122]. On the one hand, sex and gender have been given more consideration in the field of health sciences, as mentioned above. On the other hand, a direct relationship between social support and health promotion is well-documented by many health researchers; most scientists agree that low levels of support are associated with poor physical and mental health [91, 92, 94]. Therefore, it is important to understand the role of sex and gender in giving and receiving social support experiencing health problems, which consequently may affect the recovery outcomes. The relationship between social support and health, including sex and gender differences, may be influenced by three main factors [123]:

1. Structure and function of social support: a) girls and women have more confident and affective relationships than boys and men, while men cite their spouses as their only confidants [124, 125, 126]. Women tend to be more involved in caregiving activities [127]; b) women tend to receive all types of support because they tend to exhibit more social participation [124, 128]; and c) men and women are more likely to rely on women than men as their primary source of support [127, 129].
2. Linking social support and health: women's health behaviour and health beliefs tend to differ from men's which may affect the relationship between health and social support [130]. For example, one of the hypothesized mechanisms underlying the relationship between social support and health is that women are less reactive to stress than men [131] and the presence of a supportive person can reduce this stress-reactivity for women [132].
3. Morbidity and mortality: women's mortality rates are lower than men's in most developed countries [133]. However, gender differences in morbidity are more complex than mortality as women have more chronic but less severe and less life-threatening conditions [134]. Gender differences can explain the mortality and morbidity gap between men and women through biological risks, acquired risks, illness behaviour, and health care [134].

Concerning the effect of sex and gender on social support and health, a longitudinal cohort study of Health-Related Quality of Life (HRQOL) assessment among men and women with coronary artery disease (CAD) in Alberta, Canada, suggested that women reported worse HRQOL one year after CAD than men, which accounted only for sex differences and social support [135]. This study suggests a potential influence of

psychological interventions targeting depression (related to sex and gender) or inadequate social support for better outcomes for both men and women. In contrast, the result of a prospective observational study on the role of sex and gender in recovery among young patients with MI shows that low social supports are associated with worse health status, but no interactions are observed between social support and sex [136].

Psychologically (not biologically), women may experience more stress than men for reporting musculoskeletal pain and seeking or accepting compensation [137]. This leads to the question of whether there are sex and gender differences for seeking or providing social supports following musculoskeletal conditions and whether these differences can influence the recovery outcome. A descriptive study of 121 patients (71 women and 50 men) with intractable pain of the neck, shoulder, and back shows that pain in women is associated with dysfunctional coping strategies such as catastrophizing, but this association is not observed among men [138]. An in-depth understanding of all patients' needs related to social support following health conditions and their support providers is required to improve the quality of recovery and promote the outcomes.

1.11 Thesis Rationale and Objectives

Despite the limitations following DRF and the importance of social support in recovery from these injuries, we are not aware of any study exploring how partners may contribute to provide this support for patients with respect to domestic duties, as unpaid family roles. Moreover, the focus is always on what the person is able/unable to do rather than who is able to do it instead and cover responsibilities during the recovery. No single research investigates the role of sex and gender as it relates to how individuals' partners

support them in doing unpaid housework and family roles. Therefore, exploring the role of sex and gender in providing this support will promote our practical understanding of all patients' needs during the recovery. Rehabilitation plays a vital role in facilitating the individual to return to function. Therefore, it is imperative to know their perceptions of how daily life activities integrate into recovery and rehabilitation. So, the purposes of this thesis are to understand:

1. What are the impacts of a DRF on the comfort, family role responsibilities, work, and social activity of patients?
2. What are coping strategies are enacted by families to provide tangible and emotional support to persons after DRF to meet the family roles' demands?
3. Are the perspectives of men and women about the importance of these forms of social support different?

1.12 Composition of Thesis

The thesis is comprised of 3 chapters. The present Chapter 1 consists of an introduction and review of the literature exploring the nature and scope of research on the relation between DRF recovery and social support and sex and gender; Chapter 2 describes the main study, answering each research question. Chapter 3 contains a discussion and conclusion.

The thesis objectives were addressed in the main study (Chapter 2) which was performed as part of the requirements for the School of Rehabilitation Sciences Master's program at McMaster University.

Manuscript (Second Chapter) - Study Design: interpretive descriptive (semi-structured interview)

The primary aim of this study was to describe how patients experiencing DRF respond to the injury and to understand their perspective of receiving tangible and emotional support related to family role responsibilities during the recovery, and finally whether sex and gender influence this support. In this study, we received ethics approval from Western University's Ethics Boards (REB) and conducted interviews with 12 participants to reach data saturation.

This paper advances the literature and our knowledge of the coping strategies which can apply by families to support patients with DRF during the recovery, and whether sex and gender play a vital role to provide this support resulting in different recovery outcomes. The final chapter provides a discussion of the overall findings and the contribution of this work to the rehabilitation science and practical setting. In summary, the research in this dissertation attempts to address the lack of understanding of the role of sex and gender in providing support for patients with DRF.

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Chapter Two:

**A qualitative study of people recovering from
a distal radius fracture with respect to their partners' support in
managing family role responsibilities during early recovery**

Title: A qualitative study of people recovering from a distal radius fracture with respect to their partners' support in managing family role responsibilities during early recovery

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2.0 Abstract

Background: Distal radius fracture is a prevalent upper extremity injury. Exploring partners' role in providing support from the persons' perspective may influence the experience of recovery following this injury. Moreover, describing coping strategies applied by persons and their partners to complete family role responsibilities can promote recovery outcomes.

Objectives: The objective of this research is to explore the lived experiences of persons with distal radius fracture by examining their perspectives on how their partners contributed to completing family role responsibilities during their recovery, their implemented coping strategies, and to analyze their perspectives through a sex and gender lens.

Design: Interpretive Descriptive Qualitative Study

Methods: Semi-structured interviews were conducted with 12 persons who had partners in the acute recovery stage following a distal radius fracture to explore the distribution and performance of family role responsibilities for men and women following distal radius fracture. A thematic analysis was conducted on the verbatim transcribed interviews. A

process of constant comparison was applied until data saturation occurred. Trustworthiness techniques were used in data analysis, and included peer reviews.

Results: Four types of support received from partners following a distal radius fracture were identified: 1) emergency support; 2) instrumental support for family roles; 3) companionship support for social and recreational activities, and 4) emotional support. A fifth theme explored diverse supports valued by persons with DRF. They mentioned a need for informational support from the healthcare professionals. The sixth themes represented coping strategies applied to lessen the burden of distal radius fracture on the family; maintaining independence, cognitive coping, deferring unnecessaries, and learning communication. The impact of gender on the pattern of seeking/receiving social support was discussed as the secondary purpose of this study. Women required instrumental and emotional support while the emotional status of men was not affected by distal radius fracture. This finding of gender differences is required more future investigation.

Conclusion: Multiple social support provided by partners to persons with a distal radius fracture to complete family roles were highlighted through patients' perspectives. Also, implemented coping strategies within families were explored. However, partners' perspectives and experiences are required to promote our knowledge of patients' and their partners' needs to complete family roles during the early recovery.

Keywords: Distal Radius Fracture, interviewing, social support, family role responsibilities, sex and gender.

2.1 Introduction

Distal radius fracture (DRF) is the most common type of fracture.¹ Overall DRFs account for approximately 640,000 fractures per year in the United States,² and 25,355 cases in Ontario Canada in 2013, with the incidence rate of 2.3 per 1000 and 2.7 per 1000 persons among persons 35 years and older, respectively.³ DRFs contribute to nearly 20% of all fractures seen in the emergency room.⁴ DRF typically occurs as the result of a fall on an outstretched hand,⁵ and it is prevalent in all age groups with a higher incidence among postmenopausal females due to osteoporotic changes in the bones and a decrease in estrogen production.^{6, 7, 8, 9, 10, 11}

Following DRF, persons can be treated surgically or conservatively.⁶ Long immobilization after both treatments may exacerbate stiffness and increase the risk of developing osteopenia, particularly in adults over the age of 50.¹² Common complaints following DRF include weakness, pain, and stiffness.¹³ Although most persons experience pain and difficulty performing functional activities after DRF, they tend to recover such that they have minimal pain and disability six months after the fracture.¹⁴ However, 16% of persons reported pain and disability one year after DRF.¹⁵ In addition, some complications such as hand stiffness, malunion, Complex Regional Pain Syndrome (CRPS), and delayed return to work may prolong the rehabilitation phase.^{16, 17} Moreover, functional difficulties can persist following DRF in sports, work, or whenever the hand is used.¹⁸

Persons with DRF often express experiencing more difficulties in performing household duties than personal care, specifically during the first three months following the injury due to having pain and disability.^{13, 19} Therefore, providing support in housework and family roles is critical during the recovery time and persons' partners can offer this

significant support. Therefore, it is imperative to address challenges in everyday life activities and needed social support in designing rehabilitation programs. In addition, family involvement in patient care may promote patients' engagement in treatment²⁰ and help manage chronic health conditions.²¹ Families who provide support may also benefit through increased feelings of being helpful, and the ability to act as the person's advocate.²² More importantly, the family can provide health professionals with information to better understand persons' needs.^{20, 23, 24}

Despite the significant role that partners and immediate family can play in providing supports for persons with DRF to complete housework and family role responsibilities, to our knowledge no research has explored persons' views on this subject. What remains unknown is how partners might be integrated within patients' care at home and patients' feeling about their partner's role in their recovery following DRF. This study is intended to address this knowledge gap to explore how sex and gender influence supports for persons with DRF during their early recovery. To achieve these aims, we conducted semi-structured interviews with persons who had DRF, lived with a partner, and their wrists were still immobilized.

2.1.1 Purpose of the study

The primary aim of this study was to describe the lived experiences of persons with co-habiting partners and such persons' perspectives on supports provided by their partners in completing family role responsibilities during the early recovery following DRF. This study also explored implemented coping strategies by persons and their partners, and the role of sex and gender in coping and recovery.

2.2 Method

2.2.1 Study design

This study is a qualitative part of a mixed-method research on DRF and family role responsibilities. This is an interpretive description qualitative study.²⁵ Interpretive description was considered the ideal approach for this study because the focus of this methodology is on capturing themes and patterns within the subjects' perceptions and experiences to generate a practical understanding of those perspectives.^{25, 26, 27} This approach aligns with our purpose of understanding persons' experiences and needs related to family role responsibilities during the early recovery following DRF, and their coping strategies.

2.2.2 Study setting

All participants were recruited at the Hand and Upper Limb Center (HULC), St. Joseph's Health Centre, London, Ontario, in February and March 2022.

2.2.3 Sampling, Participants, and Ethics

A purposeful sampling technique was engaged to recruit diverse participants for interviews based on their age, gender, number of dependents, and paid work status. Fourteen participants who lived with a partner and had DRF were recruited for the study. However, one male participant withdrew from participating in the interview and one female participant could not be reached by phone. Therefore, those two participants were removed from the study and as a result of the maximum variation technique, 12 participants with DRF, whose wrists were still immobilized, were included, consisting of 2 males and 10 females. The study

protocol was approved by the Western University Research Ethic (REB) in London, Ontario, Canada (Project Number #114561, Date of Approval: 1 November 2019). Informed consent was obtained from all participants involved in this study (Appendix 2A).

2.2.4 Recruitment

Participants (persons with DRF) were approached by the first author (SS) while they were waiting for their appointment at the HULC. She (SS) explained the study and her goals to conduct it and asked if persons were willing to participate. Then, consented participants were asked to fill a survey (Appendix 2B) on their family role responsibilities, and if they were willing to participate in an audio interview, either online via WebEx or by phone, to respect pandemic safety guidelines. Those who were interested in participating were provided with explanations about the study (please refer the Appendix 2A - the letter of information (LOI) of the study). Participants had as much time as they needed to review the LOI and they were able to withdraw from participating at any point in the study.

2.2.5 Inclusion criteria

Persons were eligible to participate if they met the following criteria: a) being diagnosed with DRF; b) having a co-habiting partner c) being aged 18 years or older; d) being able to speak in English e) being able to provide informed consent; F) having access to a phone or computer for the interview. Participants who could not read the LOI of the study in English were provided with all information about the study procedure verbally.

2.2.6 Demographic data

Persons with DRF who consented to participate in the study were asked to complete the demographic information sheet and the study questionnaire (Appendix 2B) to describe their responsibilities. All of the participants' documents that included identifying information were coded with a predetermined coding system to maintain the anonymity of the participants when using illustrative quotes. The coding of the participants was DRF1, DRF2, DRF3..., etc.

2.2.7 Data collection procedure

A semi-structured interview guide was developed through discussion with the research team based on the research question, beginning with a broad question and leading to detailed information through follow-up questions. Initially, participants were asked to explain what they experienced when the injury occurred. Follow-up questions then focused on how the completion of family roles might be affected post-injury compared to pre-injury, and what coping strategies were applied by partners to complete those roles. All questions focused on the following areas: 1) household chores; 2) supervision and caring for children; 3) caring for relatives; 4) personal care; 5) emotional care; 6) other supports. The closing question focused on patients' perceptions of the healthcare system's role in providing support for family role responsibilities. Open-ended questions were used to encourage participants to give detailed explanations and were accompanied by probing questions to elicit further in-depth information from participants. The complete interview guide is available in Appendix 2C.

No face-to-face interview was conducted based on the participants' preferences. Interviews lasted between 15 and 30 minutes. Twelve participants were interviewed over the phone. The first author (SS), an experienced physical therapist and Master's student in Rehabilitation Sciences, conducted all the interviews in March 2022. The second author (CZ), a native English-spoken and experienced physical therapist, accompanied the first author (SS) in seven interviews in case of potential misunderstandings between the interviewer (SS) and participants relating to the language.

2.2.8 Sample size and saturation

Data were coded and analyzed after each interview, and interviewing continued until a data saturation point was reached.²⁸ The data saturation point in this study was established as a point where two consecutive interviews did not yield any new findings, which occurred once ten female participants had participated. Time constraints and lower prevalence of DRF among males meant that only two males could be recruited. Therefore, it was hard to reach saturation among males due to ending the data collection phase.

2.2.9 Data analysis

Interviews were audio-recorded and transcribed verbatim by the first author (SS). All data were imported into Microsoft Word and Excel for analysis and all personally identifiable information was removed. Braun and Clarke's six-stage thematic analysis²⁹ was used for the analysis process. Analysis consisted of 1) familiarizing with the data 2) line-by-line coding

of the raw data 3) merging codes from all textual data into initial themes 4) reviewing themes and considering the relationship between them 5) creating the final themes and 6) writing up the report.

To enhance trustworthiness in the analysis, generating initial codes was done by the first author (SS) and the second author (CZ) of the research team, separately. Agreement on the codes was sought by discussion and consensus between them. Similarly, the first and second authors generated initial themes independently. Then, the coders came together to discuss developing final themes. All data analysis steps were done separately for females and males to explore the similarities and differences between their perspectives. We used COREQ reporting checklist to improve rigor, comprehensiveness, and credibility of this study.³⁰ (Appendix 2D)

2.3 Results

2.3.1 Participants

Twelve participants contributed to this study. Table 2.1 illustrates the detailed demographic information of the participants. All participants were married and lived with partners.

Table 2.1 Demographic Data

| Patient ID | Age | Sex | Gender | Profession | Injured Hand |
|-------------------|------------|------------|---------------|-------------------|---------------------|
| DRF1 | 60 | Female | Woman | Not working | Dominant |

| | | | | | |
|--------------|----|--------|-------|------------------------|--------------|
| DRF2 | 70 | Female | Woman | Business owner | Non-dominant |
| DRF3 | 67 | Male | Man | Retired | Dominant |
| DRF4 | 42 | Female | Woman | Employed | Dominant |
| DRF5 | 59 | Female | Woman | Employed | Non-dominant |
| DRF6 | 73 | Female | Woman | Retired | Dominant |
| DRF7 | 63 | Female | Woman | Business owner | Non-Dominant |
| DRF8 | 72 | Male | Man | Retired | Dominant |
| DRF9 | 65 | Female | Women | Retired | Dominant |
| DRF10 | 76 | Female | Women | Retired | Non-dominant |
| DRF11 | 64 | Female | Woman | Occupational therapist | Non-dominant |
| DRF12 | 64 | Female | Woman | Travel agent | Non-dominant |

2.3.2 Identified themes

Participants noted challenges in maintaining family role responsibilities and social activities during recovery following DRF. The impacts of DRF were described as impacting directly on the person's comfort, activity, and participation and indirectly on the partner due to providing support. Therefore, the results are organized to address research questions based on six generated themes related to provided support in family role responsibilities. Firstly,

participants' experiences were highlighted to explore received support in family role responsibilities. Secondly, participants' perspectives about coping strategies (engaged by them and their partners) were investigated to discuss practical solutions to meet family demands (instrumentally and emotionally). Figure 2.1 provides a summary of required support for persons with a DRF. Finally, emerging themes were compared to explore the role of sex and gender in seeking/receiving support.

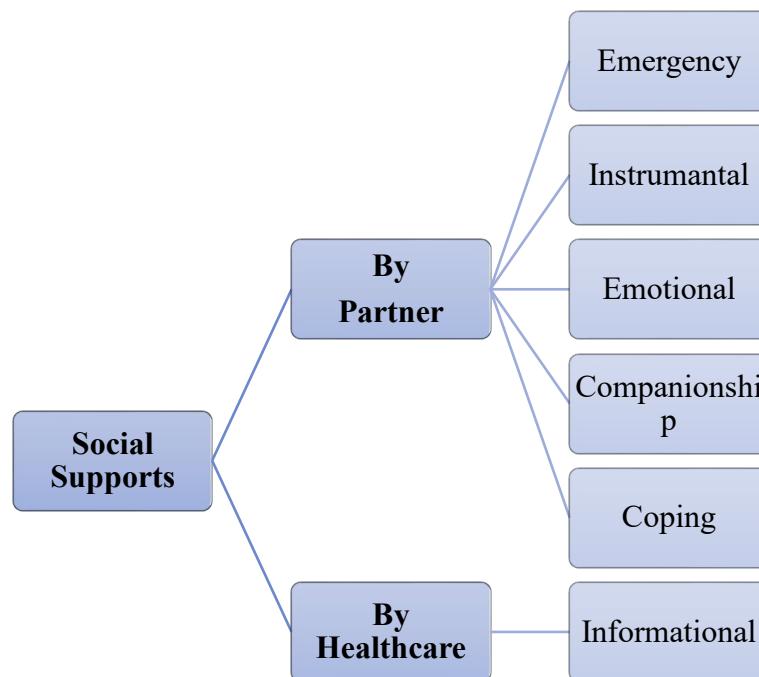


Figure 2.1 Summary of supports provided by partners and healthcare valued by persons with a DRF

1. Partners are critical emergency support.

To most participants, support was essential to manage the situation immediately after the injury. Physical and emotional assistance was reported for the partner's presence at the time of fracture as described by multiple participants:

... He wanted to help me because I made a screaming cry kind of thing...he tried to help me get ice, he got me aspirin...but I couldn't get comfortable...he called telehealth but it was going to be 4 hours. So, then he drove me to the hospital... the whole thing would have been different without him, he packed me a bag for the hospital, put snacks in a bag and water like a beach pack. So, I wouldn't have had any of those things... (DRF4)

...If I had been alone, it would have been very really frightening. Because you know I wasn't able to drive or do anything like that. So, the support there was good... (DRF7)

Nearly all participants mentioned that the fracture experience would have been different or frightening without their partners.

2. Family physical chores are shifted to the partner based on the patient's limitations.

While personal care was considered manageable by all participants, they described the need for tangible supports provided by partners for family roles including households, family caring, and transportation.

To illustrate, participants stated that their reduced ability to complete household chores resulted in transference of responsibilities to their partners. Consequently, participants reported that partners undertook specific tasks and activities more than before:

... I can't open any jars, you know, I didn't realize how much you use your other hand to stabilize things when you're cutting something...so, my husband is doing stuff like that, cutting vegetables or fruit or whatever because you need two hands for... (DRF7)

... Obviously the snow shoveling was completely not something that I could do. so, he just went and did it. Knowing that it was something that needed to get done and I wasn't capable of doing it, and I normally would have. So, he just did it... (DRF5)

Participants reported that they became dependent on their partners for physically getting to the places such as driving to the hospital:

...So, additional chores for him [driving the place] ...he drives me to medical appointments related to my broken wrist or today he has to drive me to my hair appointment. So, yes, then he's giving up some of his activities in order to drive me places and take me places... (DRF6)

Although this support may be appeared uncomplicated, most partners had to reschedule their plans to make time for such assistance.

One significant family role that participants reported shifted to partners due to the participant's physical limitations was caring for family/relatives:

... My mom is away [not living with us] and we're watching her... now, I can't do that by myself. So, that's another chore that we have. So, that's something that he has to take time out and that's not a hardship but it's just like one more thing on our plate...so, it's affecting him as well...(DRF4)

It appeared important for only one participant to continue this support for her mother in the same way as before the injury. However, it was worth considering as the potential role which required partner's support to complete. Also, no one had children living with (because of the age of the sample) or some had been involved in the care of grandchildren but it was truncated by the pandemic before the injury had happened. This role (caring and supervising children) may concern ones who have to perform it during the recovery.

Despite the small number of men in the study, there was an apparent difference in the level of comfort with seeking help between the men and the women. Women expressed more concern that they were bothering their partners or noted that help was there upon request:

...He's doing a lot, and he's doing well, but I...I feel bad but he hasn't been making me feel bad... (DRF4)

...I know he'll step up if I ask him basically. if I say, can you do this, he'll do it but I tend to be a little bit stubborn that way. I'd like to kind of do things on my own... (DRF1)

On the other hand, men pointed to the advantages of teamwork in completing physical chores and mentioned it as the reason for not being shy to ask for help or being dependent:

...I would say that...she is caring on pretty much just as she had before, and it's just...I would say general teamwork. it's not...um...she hasn't had to make a lot of accommodation... and I certainly don't feel shy about asking her if...if I have to. I'm sure I feel more of a stress, if I wasn't able to take...take care of daily activities and that sort of thing. But...but that hasn't been an issue... (DRF8)

Therefore, gender may affect the health behaviour; although women received multiple supports, they did not feel comfortable for bothering their partners and they tried to be independent. However, men relied on their partners for providing support during the recovery following a DRF.

3. Social and recreational activities are facilitated by partner's companionship support.

Participants described that continued or renewed engagement in social and recreational activities required support from partners. Most participants in this study noted that they relied on partner support for walking outside:

...We have a dog and in the morning walk with the dog; I had always done that walk myself. Now, he comes with me just to you know make sure I don't fall, just cause mostly because it's winter. And also, to help you know pick up...it's harder to pick up the dog poop with one hand and hold the dog with the other... (DRF7)

One participant reported that not receiving this type of support from her partner was a barrier for meeting her friends:

... My friends want me to come over and my husband thinks I should take it easy... (DRF4)

Providing this companionship-based forms of support by partners was reported by participants to be a significant facilitator for participants' engagement in such activities.

4. Instrumental and emotional supports are intertwined.

Since participants, especially females, described being confronted with their limitations to engage in activities and family role responsibilities, they also reported their emotional status was affected. They described a great deal of frustration or concern while trying to do activities and how partners indirectly reduced these negative emotions by doing these tasks and activities for them:

... I know how much is there sort of intertwined. Aren't they? If I'm feeling better, if my wrist is healing better, then we were happier. We don't have to prolong this... so like me taking care of it physically will also be good like beneficial for us, emotionally and mentally. So, him supporting me and asking me how I'm doing, bringing me my aspirin, making sure I'm taking my aspirin on time, just like that is as nice to me as him opening a can... (DRF4)

Further, some partners' behaviours (such as encouragement, showing care and love by doing things, being more attentive, and respecting the minimal amount of independency) were noted by participants as emotional support that cannot be separated from physical assistance:

...Because I like doing things and that's the way I received love when he does those little things for me and it's just cool...different types of personalities in different ways received love and when he does that, it just shows me that he knows I'm going to rough time and cares... (DRF2)

There was a strong relation between the physical assistance and emotional support. Covering households and family roles could lower emotions for participants.

Another difference between men and women in this study was the pattern of social support received from partners. Men did not mention emotional concerns and did not report seeking emotional support. Conversely, women sought/received a broad range of emotional support from their partners other than the instrumental support required to complete family role responsibilities:

...My wife has the minimum dealing with my expressed frustration around for not being able to get out and doing the normal things...I don't feel a need for sort of strong support or sympathy...(DRF8)

The value of their partners attention to their needs was often reported by women as a sign of their self-worth, or feeling loved and cared for:

...He's learned how to do my hair... (DRF5)

...He made the bed as the way I like it, buy the flowers. Yeah, pretty supportive... (DRFR7)

...He seems happy enough to do it... I would say he feels very sympathetic to my...he can see that it's frustrating...(DRF8)

Therefore, gender may affect the pattern of seeking/receiving social support after a DRF. Women valued both emotional and instrumental support whereas men reported that their emotional status was not affected by DRF.

5. Diverse supports are valued by persons after DRF

All participants reported that family role responsibilities were manageable by they and their partners and additional support from healthcare system was not required to lessen the burden. However, the informational support provided by healthcare professionals was described as an important way to recognize the routine course of treatment and recovery.

Patients suggested more communication and standard written materials would have helped with this:

... I think maybe the health care system could do is have more communication about... I've never broken a bone or had a cast... they are assuming that you're going to ask the right questions but actually if you're injured or in pain or anything you don't even think as clearly as you would be..., I mean I've googled it and how to take a bath? how to wrap your arm? and you know things like that. but there nobody really, they haven't said much about care if the cast gets wet... (DRF7)

...Some sort of standard written material to say "OK, this is what's happened, this is what's likely, this is where you're likely to experience, these are some suggestions for", or whatever or here's some resource... (DRF8)

Although participants could access to the information online, they might prefer to receive this information from healthcare professionals (as the reliable source) who were familiar to participants' health conditions.

6. Compensatory strategies to meet family role demands.

Thematic analysis identified various coping strategies described by participants as being used by themselves and their partners. Most participants reported using these strategies. Each of these coping strategies is described below:

6.1 Maintaining independence

Trying to be independent and active, asking for help if required, and figuring out how to complete the task was described by participants as the method of coping emotionally and physically with reactions to a DRF:

...He's trying to be really supportive. I'm very independent. So, I don't ask for a lot. so, I'm trying to do a lot on my own... (DRF1)

...I've been able to find ways to...to work around most things that...so, I haven't had to rely on a help from others for that... (DRF8)

Trying to be independent may lower participants' negative feelings about their restricted ability to perform everyday life activities.

6.2 Cognitive coping strategy

Participants described using several cognitive coping strategies to manage this situation including maintaining a positive outlook, focusing on the temporary nature of their condition, and appreciating life and their partners' presence. Maintaining positive outlook included patients' avoidance and minimizing their situation in comparison to other worse potential circumstances:

...I am so grateful because I could have broken both hands. can you imagine? I just can't imagine now having one would... the conversation would be quite different... (DRF2)

...In perspective to what's going on in the world and everything like you know like my personal attitude is that my injury seems very minimal and don't need any conveniences. I...I certainly have no reason to complain... (DRF8)

Moreover, the temporary nature of the physical limitation was quite helpful for participants to keep up with stamina:

...Normally I'm very independent, he still there just supports me... fine, I assume it's temporary. so, I'm OK with it... (DRF6)

Appreciating life and partners' presence was another cognitive strategy to reduce the likelihood of the tension and emotional burden of the injury:

...We're really appreciating life more. with this and what my husband went through. it's like we appreciate what we have. and yes, I can't use my hand for a few days but

I mean there's a lot more. You could think about everything that's going on in the world around us, and this is minor... (DRF2)

On the other hand, some cognitive coping strategies were enacted by partners including being patient, adaptive, and changing the mood by humor:

... You know my husband is trying to be patient and I'm very frustrated. So, I mean that's a good attention I guess...he knows that I don't like asking. So, I think he would go ahead and do it anyways... (DRF)

... He's been making fun of my foolish injury. (laughing) and yet in the middle of the night when like nothing makes sense, we've been having a laugh about that... (DRF4)

These cognitive coping strategies (mentioned above) can be considered practical solutions to minimizing the emotional burden on the family after a DRF.

6.3 Deferring unnecessary tasks

Participants reported that they and their partners deferred unnecessary tasks to the future and took time with doable and required tasks:

...I haven't been picking up and doing my regular tidying up and things like that and that's fine for me, I'm OK with that. So, some of the cleaning has taken a backseat... (DRF4)

...We haven't got anybody available right now to give her a hand because her mother is 90 years old and we're having issues with her mother... So, you know we're just putting off what we have to put off, and make our list little smaller... (DRF3)

Making the do-list smaller helped participants and partners to cover family roles based on their needs.

6.4 Learning communication

Participants reported that communication was a challenging part of the recovery. Knowing each other, making a conversation, and recognizing when they should ask for help had an impact on receiving support from partners:

...It's hard, it's the communication, to communicate what I would like him to do. that's where sometimes the difficulty comes...It's learning to communicate...That's the big thing I think for us...I mean on his part asking of me, and on my part just making sure that I don't get frustrated because I have to repeat things, because he didn't understand what I said... (DRF2)

Having an effective communication may be considered an important part of recovery to receive a proper support from partners.

To conclude, partners' activities and roles in providing support for participants with DRF were highlighted. Participants valued multiple assistances from their partners in the emergency condition after DRF, physical family roles, and social and recreational engagement. Moreover, emotional and instrumental supports were reported intertwined by participants. Although informational support from healthcare professionals was not the focus of this study, it has emerged repetitively through interviews. In addition, various coping strategies engaged by participants and their partners were described through participants' perspectives that can be applied in a practical setting as a recommendation to reduce the burden of DRF on the family. Finally, gender may affect seeking/receiving social support following DRF; women valued both emotional and instrumental supports. However, men did not seek emotional support after a DRF.

2.4 Discussion

This study provided insight into how persons recovering from a DRF rely on their partners for instrumental help, to sustain social interaction and emotional support which is integral to how family role responsibilities are performed in the acute recovery period. The thematic analysis presented a broad range of social support received by participants to help them cope with and confront physical, social, and emotional challenges imposed by DRF. While partners were critical supports as they are most proximal to the participant, the participants expressed that health care organizations could have been more helpful by providing educational information about coping with family role responsibilities and self-care during recovery. Although informational support was not the main focus of this study, this type of social support was considered essential from participants' perspectives to receive standard suggestions/advice and references from a healthcare professional.

Receiving tangible support in the first two weeks after the fracture to complete physical family role responsibilities was a common theme reported by participants. In addition, most responsibilities shifted to the participants again after they regained their ability. This finding is in line with the previous repeated-measures observational study that described changes in the frequency and type of compensatory mechanisms used by persons with DRF during the six months after the injury.³¹ It discussed that as persons' status improves over time since injury, support may no longer be required for the successful performance of activities of daily living (ADL). In a descriptive study, persons with DRF engaged in a semi-structured interview 2-4 weeks after discontinuing immobilization.³² Emotional, instrumental, and informational supports from healthcare professional and a broader circle (e.g., family, neighbors) were reported by participants. This study suggested that those multiple supports can assess and address persons' behaviours and beliefs for an

optimal recovery following a DRF.³² Moreover, a biomedical guideline for rehabilitation after DRF suggested that anatomic alignment following DRF is maintained within 4-8 weeks, good strength is achieved by 8-12 weeks, and complete healing with the remodeling of bone may take 6-12 months.³³ This is important to mention that all these stages in this biomedical recovery after DRF can overlap and are determined arbitrarily due to the sequence of callus healing in long bones (including inflammation, soft callus, hard callus, and remodeling).³³ These timelines may justify the importance of seeking/receiving support in ADLs during the early recovery phase to complete family roles responsibilities and optimize recovery. Based on the taxonomy of occupational performance, task is a set of actions and movements, activity is a set of tasks, and occupation is an activity or a set of activities that is performed with consistency and regularity.³⁴ These differ from roles, which are defined as the rights, obligations and expected behaviour patterns associated with a particular set of activities or occupations, done on a regular basis, and associated with social and cultural contexts.³⁴ A previous descriptive study using qualitative semi-structured interview, was conducted to elicit information concerning “how your wrist disorder has affected your ability to perform daily activities”.³⁵ The result of that study indicated functional difficulties in ADLs after wrist disorders.³⁵ Our study provides more depth about the nature of challenges in completing ADLs related to family role responsibilities and required functional support after a DRF; family activities and roles including households and transportation are reported by participants as being physically painful or difficult. This is consistent with the result of previous studies.^{4,35} Caring for family/relatives is added to difficult family roles by our study. Overall, participants reported their partners' instrumental support positively after the fracture by covering physical family tasks, activities, and roles (households, transportation,

family/relatives caring). However, the level of support offered by partners for these activities and roles appeared to be influenced by patients' perceptions of independency, physical limitations, and their sex and gender.

Partners' encouragement and companionship facilitated social activities for persons with DRF. Participants expressed their fear of walking or limitation for having guests after DRF and how partners could be facilitators or barriers in these activities. This may promote a focus on the function of social support (social companionship) and its influence on the recovery rather than the structure of social support (number of social connections) following a DRF. A quantitative study was conducted to explore the influence of leisure-related social support (companionship) on life stress and to examine the effect of life stress on mental and physical health problems.³⁶ The result indicated that life stress was positively related to mental and physical illness symptoms and companionship support can moderate this effect on mental illness (depression) and physical illness symptoms.³⁶ A previous interview-based study aimed to explore the association between companionship support and improve quality of health outcomes; results reported that support mechanism consisting of companionship and the presence of family or other people will lead to improve quality of health outcomes and less mental illnesses.³⁷ Therefore, this functional support provided by partners may reduce negative emotions and promote recovery after DRF. Moreover, a secondary analysis of cognitive interviews with persons who had Complex Regional Pain Syndrome (CRPS) showed that painful sensitivity has impacted their intimacy and social interactions.³⁸ However, in our study, most participants expressed that their interactions within a family have not affected due to DRF. Two potential reasons can be discussed for that: 1) assuming that this health condition is temporary by participants and their partners; 2) having restricted

social interactions before the injury due to the pandemic. However, fear of fall was expressed by most participants as the barrier to not attending in a broader circle of social interactions, unless they have their partners' companionship.

Emotional support was also reported by participants to be prevalent, which is intertwined with instrumental support. Participants reported that this support decreased their negative emotions. This finding is aligning with a mixed-method study aiming to describe the controllability of stressful events and satisfaction with spouse support behaviours.³⁹ The results presented that high level of emotional support (caring, empathy, and sympathy) from partners was associated with recipient's satisfaction.³⁹ Moreover, a positive relationship between emotional support and physical outcomes after DRF has been presented before.³⁹ A cohort study examined the role of social support in patient-reported pain and disability at one year following DRF; emotional support at baseline is significantly predictive of 4.7% of the variability in patient-reported pain and disability, affecting improved outcomes in one year following DRF.⁴⁰

Our participants shared a variety of coping strategies to better adjust to the challenges following DRF include maintaining independence, cognitive coping, deferring unnecessary tasks, and learning communication. These strategies were engaged by patients and partners to lessen the acute physical and emotional burden of the injury. A prospective cohort study aiming to investigate the effect of pain coping strategy and catastrophizing on functional recovery after hand fractures, confirmed that poor coping skills (measured by high catastrophic thinking and anxiety) are associated with weaker grip strength, decreased range of motion and increased disability, specifically six months after hand fractures.⁴¹ Findings showed that Pain Catastrophizing Scale (PCS) and Pain Anxiety Symptom Scales (PASS)

were significantly associated with delayed functional recovery after a DRF; an increase in the PCS score was associated with a decrease in ROM, grip strength, and Michigan Hand Questionnaire (MHQ) at week 4 post-operative, whereas an increase in PASS score was associated with a decrease in ROM, grip strength, and MHQ at week 4 and grip strength and MHQ at week 12 post-operative.⁴¹ Given this relationship, it is important to promote coping skills to decrease PCS and PASS to optimizing recovery after a DRF.

Gender differences were evident in seeking/receiving support concerning family role responsibilities in our study; although women disliked a loss of independence, they reported that they relied on their partners emotionally and physically. There is ambiguity within the literature about the role of sex and gender in seeking/receiving support. Women (feminine) appeared slightly more emotionally and instrumentally dependent than men in a study of assessing gender, gender role and interpersonal dependency,⁴² whereas other studies considered sex, not gender, as the main variable to seek/receiving social support.^{43, 44, 45, 46} In a prospective study aimed to identify the different trajectories of quality of life (QOL) after DRF, sex was the only significant factor for physical and psychological QOL; females are at risk for lower physical and psychological trajectories which can provide opportunity for monitoring and intervention.⁴⁷

Moreover, men mentioned that their emotions were not affected after DRF. So, they did not report seeking/receiving strong emotional support from their partners. Therefore, the pattern of social support may be influenced by gender. Based on the previous study, using questionnaire surveys to find the relationship between sex, gender, personality, and social support, gender is significantly correlated with patterns of social support; femininity is

associated with seeking/receiving emotional support, while masculinity is linked only with receiving physical support.⁴⁸

More investigations are suggested to explain the relation between sex and gender and social support received by persons with DRF as the result of our study can not provide a rigorous conclusion.

2.5 Clinical implications

Firstly, findings can be considered to inform persons and their families about difficulties they may face following a DRF. Although multiple studies described physical restrictions after DRF, our study tried to highlight challenges in tasks, activities, and occupations related to the family roles. Alongside with this preparation for difficulties, multiple coping strategies were recommended in this study that can influence recovery outcomes based on what we found in the literature. In addition, gender differences may require more attentions to provide needed social support during the recovery. More in-depth investigations are suggested to understand how recovery may differ across various gender. Finally, this study encouraged patient-centered care by educating healthcare professional to meet all persons' needs after a DRF.

2.6 Limitations

Although the detailed description in this study should enable readers to compare our findings to the similar health condition, the ability to apply results to a larger population is limited as with any qualitative research. However, a larger group of participants would have

enabled more in-depth results. Also, we narrowed our study by focusing only on partnered persons. Single persons who live alone or with their families/friends may have different needs and support. In addition, the phone interview was chosen by participants due to the pandemic but it might influence the transparency of the interview if their partners were nearby. Moreover, reflexivity might influence the interpretation of experiences talked about through the interviews. Considering sex and gender, all participants were cisgender and in heteronormative relationships in this study. Thus, the perspectives of other groups (sex, gender, relationship) have not been included. Lastly, the number of men interviewed was not enough to draw a robust comparison between men and women in receiving/seeking social support. However, we presented men's and women's perspectives to encourage more critical thinking of their specific needs during the recovery following DRF.

2.7 Conclusion

This work reflected and described social support and coping strategies after DRF. Partners' multiple support were highlighted that could influence the physical and emotional aspects of the recovery. However, despite the benefits of the partners' role, the frequency, type, and quality of interactions among families might be various. Moreover, partners' perspectives and experiences are required to explore their needs as the immediate caregiver for DRF. Finally, we are not confident of the role of sex and gender in social support. More information required to draw a robust conclusion on this matter.

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2.9 Appendices

Appendix 2.A Informed consent form and Letter of information

Letter of Information and Consent

Project Title: Home and Family Work Roles Following Distal Radius Fractures – Patient Interview

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What is the purpose of this study?

You are being invited to participate in this study because you are a patient at the Hand and Upper Limb Clinic of St. Joseph's Hospital and this study may help provide insight into how patients recover from a distal radius fracture. The interview is semi-structured, meaning we have a guide we will follow but certain questions and prompts may come up that are not anticipated.

The purpose of this study is to help understand how home and family work roles may change following a distal radius fracture. We would like to explore if and how you have changed the roles that you have at home and, if you have a partner, how he or she may support you. We also want to understand if these home and family roles are different between patients who are men and those who are women. This study will also contribute to the academic requirements of the investigators, Hajra, Sahar, Sheena.

Recruitment

Individuals, who are aged 18 or over, can speak fluent English and have a distal radius fracture.

Study Procedures

This study is an interview. You have been approached by research support staff, Katrina Munro, asking whether you are interested in participating in this study. Please read through this letter of information and if you have any questions, you may ask the research support staff. If you are willing to participate you will be asked to sign a consent form and provide your contact information if you feel comfortable. You can either complete the interview today or you will be contacted by phone to set up a date and time for the interview, and at this point you can ask any additional questions you might have about participated. The interview will take place at St. Joseph's Hospital in the Hand and Upper Limb Clinical Research Lab (DB 222). Alternatively, the interview may be conducted over the telephone if it is more convenient for you. When the interview begins, we will ask if you are still willing to participate in this study. You will be asked to respond to the interview questions honestly. The interview should take approximately 30 minutes. Any information regarding your name or demographics will be kept separate from the interview. The interview will be recorded

using an encrypted recording device and stored on a password-protected computer in an encrypted file.

As part of our study, we would like to explore the role that your domestic partner may play in your recovery and how he or she may contribute to home and family roles following your distal radius fracture. If you have a domestic partner, we would like to seek your consent to approach your partner to participate in the study. If you do not have a partner, if you do not wish for us to approach your partner, or if your partner does not consent to participate, this will not affect your participation. You may participate in this study regardless of whether you have a partner who participates.

Participation in the Study:

Participating in this study is voluntary. You will receive a copy of the letter of information and consent form for your records. You do not waive any of your legal rights by signing the consent form. You may refuse to participate, refuse to answer any questions, or withdraw from the study at any time with no effect to your future care. You will continue to receive standard care, i.e., routine checkups with your doctor. If you DO decide to stop your participation in our study, we will ask you how you would like us to handle the data collected up to that point. You have the right to withdraw all data collected for the study. If you have concerns or would like to withdraw you can contact the principal investigator, Dr. Joy MacDermid or research assistant, Katrina Munro.

What are the benefits of this study?

There are no direct benefits to you associated with your participation in this study. But your study participation will have societal benefits by helping improve knowledge about the work those individuals with distal radius fractures undertake and the support they may require.

Are there any risks or discomfort associated with this study?

There is a potential for a privacy breach, as identifying information is being collected. However, identifying information will be kept separate from the data. Instead, the data will be de-identified.

How many people in this study?

There will be approximately 30 people in the interview part of the study. However, for qualitative research, data collection will stop when we reach theoretical saturation, meaning we are not learning any new information from the participants.

Is there any compensation if I participate?

There is no monetary reimbursement for participation in this study. If needed, we can arrange to compensate parking expenses.

Will my results be kept confidential?

Your individual results will be held in strict confidence. No person, other than the study team and treating clinician, will have access to the study data.

Upon study recruitment, participants will be given a unique numerical identifier (Participant ID) that will be entered on all data collection forms containing personal information in lieu of their name. This identifier will be randomly generated and will not include any personally identifying information (such as name or hospital ID). The identifying information being collected are your name, telephone number, month and year of birth, sex/gender, hospital number, and audio recording. Your name is required to obtain your consent to participate in this study. Your telephone number is required if we need to schedule an interview. Your month and year of birth as well as sex/gender will be used to analyse the overall questionnaire results of this study. Your hospital number will be used in order to identify your follow-up appointments in the clinic. The audio recording of the interview will be used to transcribe and analyse the information that you provide during your interview.

The study investigators will keep a master copy of the unique identifier assigned to each participant. This list will be stored on the SJHC secure G drive. Participant contact information and consent forms will also be collected and stored separately from the master list of unique identifiers. All paper files will be stored in a locked file cabinet in the HULC clinical research lab and all electronic files will be stored on a password-protected computer on the secure hospital network. A brief summary of this study will be put on our lab website for public viewing; however, this will not identify you in any way. Direct quotes may be used in publication and in the media, but again no identifiers will be linked to the quotes. Representatives of the University of Western Ontario Health Sciences Research Ethics Board and Lawson Quality Assurance and Education Program may contact you or require access to your study-related records to monitor the conduct of research and to ensure that proper policies and guidelines are being followed. In accordance to Lawson Ethics Board policy, the study investigators will retain your information and study data for 15 years.

Publication

If the results of the study are published, your name will not be used. There may be direct quotes, but they will not be associated with your name. If you would like to receive a copy of any potential study results, please provide your name and contact number on a piece of paper separate from the Consent Form.

Whom may you contact to find out more about this study?

You will be given a copy of this letter. If you have questions about taking part in this study, you can directly contact:

| family/home do you do? | 0% | 1-20% | 21-40% | 41-60% | 61-80% | 81-99% | 100% | apply to me |
|--|----|-------|--------|--------|--------|--------|------|-------------|
| House cleaning (floors, dishes, bathrooms, etc.) | | | | | | | | |
| Outdoor cleaning (garage, garbage, windows, etc.) | | | | | | | | |
| Laundry | | | | | | | | |
| Home decorating (painting, wallpapering, etc.) | | | | | | | | |
| Home repairs (install doors or lights, fix bathroom, etc.) | | | | | | | | |
| Mow lawn | | | | | | | | |
| Garden (plant, weed, etc.) | | | | | | | | |
| Prepare meals | | | | | | | | |
| Shop for groceries and supplies | | | | | | | | |
| Drive family to activities or appointments | | | | | | | | |
| Arrange family appointments and activities | | | | | | | | |
| Maintain vehicles (repair, change oil, clean, etc.) | | | | | | | | |
| Help children with homework | | | | | | | | |
| Supervise children in the home | | | | | | | | |
| Care for children when sick | | | | | | | | |
| Care for other family members (parent, spouse, or others) | | | | | | | | |
| Earn family income | | | | | | | | |

| | | | | | | | | |
|------------------------------|--|--|--|--|--|--|--|--|
| Manage family finances/bills | | | | | | | | |
|------------------------------|--|--|--|--|--|--|--|--|

Appendix 2.C Interview Guide

Semi-structured interview for investigation around social support provided by spouse, family, friends or paid services during the recovery after DRF in terms of support in family roles and household work:

Length: 30-40 minutes

Goal: To better understand the role of social support from spouse, family, friends or paid services during the recovery from DRFs and how they may support patients to complete unpaid family roles

Format: Semi-structured interview questions (marked with numeric numbers) with probing questions (in alphabetical) to elicit responses that are most relevant to the participant.

Interview guide for patient’s interview session:

Preamble: Hello, thanks for accepting to participate in this research study. My name is Sahar, a master’s student in The School of Rehabilitation Science at McMaster University. In this study I am trying to understand how spouse, family, friends or paid services are contribute to the patients’ recovery after wrist fracture. This is part of my Master’s thesis. I am interested in the way that you divide up household tasks and family responsibilities, and how this has changed because of your injury. I am also interested in what other ways you have received support from your partner/family/friends to cope with your injury. I will be asking questions about all of these things but there are no right or wrong answers. Everyone has a different experience and every family is different. We will collect and share themes to help the team to understand how we can improve the situation for both patients and their families.

“For participation in this study, I will be asking you a few questions and then recording the answers as per the consent form mentioned, do I have your permission to start recording the interview?”

**Wait till you have permission to begin **

“So now I will begin to ask questions. If at any point you wish to not answer a question and move onto the next one, you may. Also, if at any time you want to stop the interview, please let me know.

Do you have any questions before we start?”

**Answer any questions they may have, and then inform them you are pressing play and will begin to record.*

If you don't mind, we are going to start by talking about your experience following your injury to understand how it has affected you and your associates.

1) Fracture experience:

Can you tell me about your fracture?

a) Were you alone at that time? OR you had someone with you?

b) **IF YES:**

- Who was that person?
- How did they help or not help you at the immediate time of the injury?
- Transport to hospital? Emotional support?

c) **IF NO:**

- How did they help or not when they first saw you after the injury?
- Any emotional reactions? things they offered to help with?

I am going to ask about different aspects of your daily life. I am trying to understand who helps you and what help they provide. Help can be from your partner, family, friends or paid services.

2) Household chores:

Indoor and outdoor

Could you tell me what indoor household chores (e.g., doing the dishes, home decorating and cleaning, home repairs, Laundry, cooking) OR outdoor household chores (Gardening, mowing lawn, shopping) were usually done by your spouse, family, friends or paid services before the injury?

a) Tell me what things your spouse, family, friends or paid services has to do differently because of your injury?

- Is there anything that they have to do more or less since the injury?

b) How do you think your spouse, family, friends or paid services feel about providing this support for you?

- Have they seemed positive or negative?
- Have they had to change their routines?

3) Family roles related to children (Skip it if no children):

How do you and your spouse, family, friends or paid services usually divide up caring/supervising children? (e.g., probes around helping children with homework, supervision children, caring for children when sick)

- a) Has this changed because of your injury? **IF YES**, can you tell me how?
 - Is there anything that your spouse, family, friends or paid services has to do more or less since the injury?
- b) How do you think your spouse, family, friends or paid services feel about providing this support for you?
- c) Has your spouse, family, friends or paid services asked for anyone to help in caring for children since the injury? **IF YES**, for what reason do you think? and from who?

4) Family roles related to Caring for relatives or friends (skip it if not relevant):

Is there anyone who needs your help that you are responsible for providing regular help to, other than your children? Do you usually do that OR your spouse, family, friends or paid services? Tell me about that. (e.g., taking family members to appointments, paying bills, doing errands, or caring for elderly parents)

- a) Has this changed because of your injury? **IF YES**, can you tell me how?
 - Is there anything that your spouse, family, friends or paid services has to do more or less since the injury?
- d) How do you think your spouse, family, friends or paid services feel about providing this support for you?

5) Personal care:

Do you usually require any help with personal care? If so, is your spouse, family, friends or paid services the one to provide that for you?

- a) How your injury has changed this situation?
 - Do you need help with your personal care because of your injury?
 - Is your spouse, family, friends or paid services the one who you ask for help?

Thanks for sharing all of those pieces. Now, I want to ask a few things about other ways your spouse, family, friends or paid services might be supporting you during recovery.

6) Other supports:

Other than tasks and family responsibilities that we have discussed, in what other ways does your spouse, family, friends or paid services think they are supporting you more now than before the injury?

- a) Are there specific things your spouse, family, friends or paid services has tried to do to provide emotional support or help for you to recover? Can you tell me what are those things?
- b) Does your spouse, family, friends or paid services think helping the specific tasks during the recovery is more important or providing emotional support? Why?
 - Do you agree with them? Why? OR why not?
- c) Has your spouse, family, friends or paid services indicated to you that they are not able to do what you asked for? Were they reasonable?
- d) Do you think that there are things which your spouse, family, friends or paid services would do for you even if you have not asked? Why would they do that?
- e) Were there any tensions in your family that might be because of the injury, or that might have become more prominent since the injury? **IF YES**, how does your spouse, family, friends or paid services try to decrease that tension?
- f) Has there been any change in your relationships with your spouse, family, friends or paid services because of your injury? **IF YES**, how do you and your spouse, family, friends or paid services manage it?
- g) Do you think that the healthcare system could help more to make it easier for you to get your personal and home activities done, to lessen the burden on your family? **IF YES**, in what way?

7) Opinion and perception

Is there anything you want to tell me that we have not discussed before?

APPENDIX 2.D COREQ (COnsolidated criteria for REporting Qualitative research) Checklist

| No. Item | Guide questions/description | Reported on Page # |
|--|-----------------------------|--------------------|
| Domain 1: Research team and reflexivity | | |
| <i>Personal Characteristics</i> | | |

| | | |
|---|---|--------|
| 1. Interviewer/facilitator | Which author/s conducted the interview or focus group? | 44 |
| 2. Credentials | What were the researcher's credentials? E.g., PhD, MD | 44 |
| 3. Occupation | What was their occupation at the time of the study? | 44, 72 |
| 4. Gender | Was the researcher male or female? | 72 |
| 5. Experience and training | What experience or training did the researcher have? | 44 |
| <i>Relationship with participants</i> | | |
| 6. Relationship established | Was a relationship established prior to study commencement? | 42 |
| 7. Participant knowledge of the interviewer | What did the participants know about the researcher? e.g., personal goals, reasons for doing the research | 72 |
| 8. Interviewer characteristics | What characteristics were reported about the interviewer/facilitator? e.g., Bias, assumptions, reasons and interests in the research topic | 72 |
| Domain 2: study design | | |
| <i>Theoretical framework</i> | | |
| 9. Methodological orientation and Theory | What methodological orientation was stated to underpin the study? e.g., grounded theory, discourse analysis, ethnography, phenomenology, content analysis | 41 |
| <i>Participant selection</i> | | |
| 10. Sampling | How were participants selected? e.g., purposive, convenience, consecutive, snowball | 41 |
| 11. Method of approach | How were participants approached? e.g., face-to-face, telephone, mail, email | 44 |
| 12. Sample size | How many participants were in the study? | 41 |
| 13. non-participation | How many people refused to participate or dropped out? Reasons? | 41 |

| | | |
|--|--|-----------------------------|
| <i>Setting</i> | | |
| 14. Setting of data collection | Where was the data collected? e.g., home, clinic, workplace | 41 |
| 15. Presence of non-participants | Was anyone else present besides the participants and researchers? | 44 |
| 16. Description of sample | What are the important characteristics of the sample? e.g., demographic data, date | 41, 44 |
| <i>Data collection</i> | | |
| 17. Interview guide | Were questions, prompts, guides provided by the authors? Was it pilot tested? | Additional file and page 43 |
| 18. Repeat interviews | Were repeat interviews carried out? If yes, how many? | No |
| 19. Audio/visual recording | Did the research use audio or visual recording to collect the data? | 44 |
| 20. Field notes | Were field notes made during and/or after the interview or focus group? | No |
| 21. Duration | What was the duration of the interviews or focus group? | 44 |
| 22. Data saturation | Was data saturation discussed? | Page 6 |
| 23. Transcripts returned | Were transcripts returned to participants for comment and/or correction? | Page 6 |
| Domain 3: analysis and findings | | |
| <i>Data analysis</i> | | |
| 24. Number of data coders | How many data coders coded the data? | 45 |
| 25. Description of the coding tree | Did authors provide a description of the coding tree? | No |
| 26. Derivation of themes | Were themes identified in advance or derived from the data? | 45 |
| 27. Software | What software, if applicable, was used to manage the data? | No, traditional approach |
| 28. Participant checking | Did participants provide feedback on the findings? | No |
| <i>Reporting</i> | | |
| 29. Quotations presented | Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? e.g., participant number | 47 to 55 |

| | | |
|----------------------------------|--|---------------|
| 30. Data and findings consistent | Was there consistency between the data presented and the findings? | Yes, 47 to 55 |
| 31. Clarity of major themes | Were major themes clearly presented in the findings? | Yes, 47 to 55 |
| 32. Clarity of minor themes | Is there a description of diverse cases or discussion of minor themes? | Yes, 48 |

Chapter 3:

Concluding Remarks and Future Directions

3.1 Summary

The overall purpose of this thesis was to explore the lived experiences of persons with distal radius fracture by examining their perspectives on how their partners contributed to completing family role responsibilities during their recovery. This study also aimed to identify coping strategies applied to lessen the burden on the family during the early recovery

following DRF and the role of gender in seeking/receiving social support from partners. To meet this goal, I have summarized previous relevant literature in chapter one and presented the analysis conducted on data derived from interviews with lived experience of having a DRF in chapter two.

Therefore, a thorough literature review synthesized quantitative and qualitative findings from studies examining a) how social support affects health promotion; b) the impacts of sex and gender on seeking/receiving social support; and c) existing gaps in literature relating to the recovery from DRF, social support, and family role responsibilities. Firstly, providing instrumental and emotional support has been shown to minimize the negative consequences of illnesses.¹ Moreover, well-being promotion and accelerating the recovery process were reported as the positive effects of social support.^{2, 3, 4} Secondly, sex has been considered influential on the pattern of social support by some studies,⁵ while others have focused on gender as the main factor, not sex.⁶ Thirdly, providing social support for persons is associated with improved outcomes in one year following DRF.⁷ Despite the broad investigation of difficulties persons might face after DRF, partners' role in providing support to minimize those difficulties, specifically concerning household management, care giving occupation, and family roles and responsibilities have not been described before.

The second chapter was an interpretive descriptive study about patients' experiences and perspectives on the role of partners in providing social support for completing family role responsibilities following DRF. In this study, common themes, influenced by my knowledge and experience as a physiotherapist, were defined to address research questions. The main focus was on how partners contributed to family role responsibilities and provided support based on the persons' needs. The results indicated physical family chores required

partners' support to complete during the early recovery following DRF. Then, various coping strategies were explored to understand how persons and their partners could reduce the burden of DRF on the family (emotionally and physically). Finally, the relationship of gender, not sex, was explored as a factor in seeking/receiving social support following DRF. Women received various instrumental and emotional support from their partners, while men reported not seeking emotional support after the fracture; however, this comparison between men and women is not robust enough due to having fewer men in comparison to women.

To conclude, the study 1) illuminates challenges persons with DRF may face in performing family activities 2) explores partners' roles in providing support for those challenges; 3) highlights multiple coping strategies individuals may engage to improve recovery outcomes; 4) encourages healthcare professionals to engage in patient-centered care; and 5) promotes notice of all sex and gender categories' needs during the recovery. Therefore, these findings can inform clinical practice by adapting care to persons' needs from healthcare professionals and partners, recommending practical coping strategies, and raising awareness of multiple needs across all sex and gender groups.

3.2 Adaptation and recovery differ across health conditions

Knowledge about health conditions, physical recovery, and psychological adaptation are key to understanding how to provide appropriate services. For example, a case series with the purpose of exploring the process of psychological adaptation after upper limb salvage (a single traumatic injury resulted in permanent impairment), explained that experience of pain, ability to participate in valued roles and activities, and having a supportive social network can be considered psychological adaptation for these persons.⁸ Therefore, hand therapists

should emphasize pain management, client-centered goals and interventions, and having a supportive social network.⁸ Semi-structured interviews conducted with persons who had traumatic brain injury (TBI) to investigate the subjective experiences of recovery and adaptation over the first two years after TBI revealed that making room for recovery (injury acceptance) and cultivating important resources (to assist) can support recovery and adaptation after TBI.⁹ However, social connection to others (family, friends, professionals, and wider networks) had bi-directional effects: it was seen either negative as it can increase frustration, burden, and vulnerability, or positive as it can be a source of help to cope with functional limitations and social role adjustments.⁹

It is clear that every injury requires specific recovery services to promote the health condition. In our study, the role of social support was highlighted to optimizing recovery while social networks may be perceived complicated among persons with TBI.⁹ Therefore, this is the role of qualitative research to provide in-depth understanding of how or what services are required for each person based on their health experiences to complete and explain the result of quantitative research.

3.3 Implications of findings

This study has the potential to advance the rehabilitation sciences in different areas. The results might be practical to shape future research projects in the area of disability and ADL management. The followings discuss the three areas of implications.

I: Clinical implications

Disability and frustration are the main complaints after DRF and result in increasing physical and emotional burdens during the recovery.¹⁰ Our study contributes to the literature

by defining the impact of partners on persons' limitations after DRF. The main finding of this study was describing partners' roles in providing support for persons after DRF. Investigation about partners' contributions to support persons, from persons' perspectives, informs the prevalence of their specific limitations concerning family role responsibilities that required support and accommodation following DRF. This is a significant aspect of disability and ADL management among persons with DRF. It is important that persons and their partners are prepared for difficulties might face after DRF concerning family role responsibilities. In addition, recommending coping strategies (applied by participants and their partners in our study) may help persons with physical and emotional issues after DRF. Finally, healthcare professionals were expected to provide informational support for persons with DRF about self-care and the trajectory of recovery. Therefore, it might be practical for clinicians, persons with DRF, and their partners to ensure that adequate information is provided to alleviate the burdens of DRF. This could include strategies for how partners can support persons or how persons can approach self-care during the recovery.

II: Education of health professionals

Although our main concern in this study was exploring family role responsibilities and social support needed for those activities, most patients pointed to the role of health professionals in providing informational support for self-care and recovery. Participants desired better communication with health professionals and valued receiving related information and guidance to optimize self-care and minimize stress during the recovery after DRF. However, for this information transfer to be routinely offered in care after DRF, these findings need to be mobilized to health professionals through professional and continuing

education. Indeed, there is a great potential to promote the learning of patient-centered practice, shared decision making, and how to support self-care for health professionals.

The active participation of patients in their care can promote clinical skills and the education of health professionals.¹¹ This patient involvement in the education of health professionals is used in nursing and social work,¹² physiotherapy,¹³ and pharmacy.¹⁴ There is an opportunity to leverage patient-engaged strategies such as the co-design of patient and family educational materials to support implementation of better communication about acute support needs after DRF.

III: Future research

There is a lack of research about providing social support after DRF with a focus on the partners' perspectives. Previous studies demonstrated various difficulties that persons might experience after this fracture and compensatory strategies they might apply.¹⁵ However, the role of immediate family including partner, family, friends, and significant others has not been explored. Our study advanced knowledge by stressing the partners' role in providing social support in particular for family role responsibilities through the persons' perspectives. Moving forward, it is also important to explore and consider the perspectives of partners as their views and priorities may differ from patients' standpoints. Moreover, partners' contributions to patient care may result in minimizing negative emotions and increasing the feeling of being helpful. In addition, partners' involvement can provide health professionals with information to better understand patients' needs.^{16, 17, 18} In addition, there is a need to explore if the required support is different for people who live alone or have

different forms of social support networks, rather than the heteronormative perspectives reflected by this study findings.

3.4 Limitations

The secondary purpose of this study was to explore the role of sex and gender in seeking/receiving social support after DRF. As there is a higher prevalence of DRF among women, we had more difficulty recruiting men and therefore had a smaller number of men in our study; this discrepancy made comparisons between men and women difficult. Although the results suggested that gender, not sex, was significant in relation to partner support in recovery from DRF in this study, more participants are required to reach the data saturation among men and promote an in-depth understanding of various standpoints across all sex and gender categories.

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