

'I've got to be independent': Older peoples' views on recovery following road injury: A qualitative study

Katherine Brown (✉ kbrown@georgeinstitute.org.au)

The George Institute for Global Health <https://orcid.org/0000-0002-9390-9680>

Ian D Cameron

Faculty of Medicine and Health, the University of Sydney; John Walsh Centre for Rehabilitation Research, Sydney Medical School Northern, the University of Sydney, Kolling Institute, Royal North Shore Hospital, St Leonards, NSW, Sydney

Lisa Keay

The George Institute for Global Health, UNSW Sydney; School of Optometry and Vision Science, UNSW Sydney

Ha Nguyen

Faculty of Medicine and Health, the University of Sydney, NSW; John Walsh Centre for Rehabilitation Research, Sydney Medical School Northern, the University of Sydney, Kolling Institute, Royal North Shore Hospital, St Leonards, NSW

Lisa Dillon

The George Institute for Global Health, UNSW Sydney; School of Optometry and Vision Science, UNSW Sydney

Jagnoor Jagnoor

The George Institute for Global Health, UNSW Sydney; Faculty of Medicine and Health, the University of Sydney

Rebecca Ivers

The George Institute for Global Health, UNSW Sydney; Faculty of Medicine and Health, the University of Sydney, NSW; School of Public Health and Community Medicine, UNSW Sydney

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Abstract

Background: Mild to moderate severity road injury in people of working age is associated with limited recovery. Less is known about people who sustain road injury in older age. This study explored perspectives, and factors related to recovery and health-related quality of life following road injury in older age.

Methods: A qualitative study using content analysis was undertaken. Participants aged 65 or more years were purposively selected from a larger inception cohort study of health outcomes following mild to moderate severity road injury. Semi-structured interviews were undertaken at approximately 12 or 24 months after injury. Content analysis was used to code and analyse the data, with methodological rigour obtained by double-coding and discussing a portion of the data to reach consensus. Results were reported using the consolidated criteria for reporting qualitative research (COREQ).

Results: Nineteen participants were invited to participate in the study, with thematic saturation reached after the 12th interview. Recovery experiences were diverse. Five main themes were identified: recovery is regaining independence; injury & disability in older age; the burden of non-obvious disability; the importance of support, and positive personal approaches. Key facilitators of recovery were regaining independence; support from family and friends, and positive personal approaches. Key barriers were threats to independence; passive coping behaviours; non-obvious disabilities (chronic pain, psychological impacts), and for some, a reluctance to raise ongoing issues with General Practitioners. Threats to independence, especially not driving and self-care, appeared to have a more profound effect on recovery than physical functioning.

Conclusion: Older people view injury as a threat to independent functioning. This is somewhat different to what younger people report. Regaining independence is key to older peoples' recovery and health-related quality of life following road injury, and should be a key consideration for health professionals, services and supports working with this unique cohort. Greater efforts to help older people regain independence following road injury are needed and can be facilitated by health professionals and appropriate service provision.

Background

Worldwide, up to 50 million people sustain non-fatal road transport injuries each year^[1] that often lead to long-term disability and reduced health-related quality of life^[2-4], even after seemingly minor injuries. In Australia, approximately 7000 older people (≥ 65 years) are hospitalised each year following road injury, representing 12% of all road injury hospitalisations^[5]. The actual number of people injured is far higher, as many people are not hospitalised and but receive treatment in the Emergency Department (ED) only or are treated in the community by General Practitioners (GP).

The world's population is rapidly aging: the proportion of older people in the population is increasing, whilst the proportion of younger people is decreasing^[6]. This demographic shift is especially pronounced in higher-income countries such as Australia, where life expectancies at birth have been increasing for the past 20 years^[7] and are one of the highest in the world^[12]. Currently 15% of the population are aged 65 years or over and this percentage is projected to steadily increase for at least the next 30 years^[1, 8], with the largest proportion of population growth seen in older driver age groups^[9]. These changes will have important implications for Australia's population health and wellbeing, and health and care systems^[7].

Today's older Australians are healthier compared to previous generations and have an increased number of years living free of disability and profound core activity limitation^[7]. Older Australians are also key contributors to Australia's social and economic well-being^[6-8]. Many older Australians have not yet retired, are semi-retired or participate in unpaid work, especially as carers and volunteer roles. The majority of older Australians lead active, independent, fulfilling and social lives: a road injury could lead to negative health, social and economic consequences for individuals, family and friends and wider society.

It is well established that older people do not recover as well compared to younger people from major, severe and catastrophic injuries due to any cause, including road injury^[10, 11]. Age-related biological changes lead to decreased physical tolerance to injury in older age^[12].

However much less is known about how older people recover from mild to moderate severity road injury in older age, despite these comprising the majority of all road injuries. Evidence suggests older people have poorer long-term general health and functional outcomes 2 years after a mild to moderate road injury compared to younger adults^[13]. Research from the United States on older people (≥ 65 years) treated in the ED following road injury found persistent pain was common and associated with functional decline, activity limitations and difficulties with activities of daily living, reduced self-rated health and changed living arrangements^[14].

Pain itself presented a barrier to recovery, associated with increased bed rest or reduced activity 6 months after injury^[15]. Psychological injuries were common: clinically significant post-traumatic stress disorder (PTSD) was present in 21% of older people at 6 months leading to increased risk of persistent pain, functional decline, and new disability^[16].

More recently it has been hypothesised that the complex process of recovery from mild to moderate road injury is best understood from a holistic, biopsychosocial approach. For example, in 2017 Gopinath et al. demonstrated biopsychosocial factors such as general health, catastrophising, pain, social support and compensation factors were better prognostic indicators of recovery than injury type or location^[17], whilst in 2018, a systematic review by Samoborec et al. concluded multiple biopsychosocial factors influenced recovery. The strongest associations occurred between poor recovery and high initial pain intensity; pain

duration, severity and catastrophising; and pre-injury physical and mental health [18]. A subsequent qualitative study by Samoborec et al. in 2019 was consistent with this evidence, finding recovery was multifaceted, complex, and influenced by comorbidities including chronic pain, depression and anxiety [19]. Major barriers to recovery were also identified: inability to self-care and/or complete domestic duties, and inability to participate in recreational activities; leading to frustration, dissatisfaction and for some was a perceived cause of depression [19]. Despite these important findings in general adult road injury populations, evidence specifically for older people is lacking, despite known poorer outcomes in older people compared to younger people following mild to moderate road injury [20].

This study aims to explore in-depth perspectives, and factors related to recovery and health-related quality of life following a mild to moderate severity road injury in older age. There is a need for exploratory research using qualitative methods to capture important aspects of recovery and health not captured by outcome measures [21], such as the previously unexplored influence of contextual factors on recovery and health following road injury in older age.

Method

Aim

The aim of the study was to explore in-depth perspectives, and factors related to recovery and health-related quality of life following a mild to moderate severity road injury in older age.

Design

The study was conducted using qualitative content analysis methodology with three main steps: coding the data into categories, identifying themes and patterns, and transforming the findings into a summary of key results (Table 3) [22].

Content analysis categories were guided by the conceptual model of the World Health Organisation (WHO) International Classification of Functioning, Disability and Health (ICF). The ICF is based upon the biopsychosocial model of disability, in which functioning and disability are outcomes resulting from dynamic interactions between health conditions, concepts describing functioning and contextual factors [23, 24]. Functioning is described in terms of body structures and functions (physical, psychological and cognitive functions, and pain) as well as activities and participation (including self-care, mobility, daily activities and social participation). Contextual factors are divided into environmental factors (physical, social and attitudinal factors, including support, systems, services and policies) and personal factors (including personal attributes, life experience and general health) [23].

Participants and setting

This study was a sub-study of the larger Factors Influencing Social and Health Outcomes following road transport injury inception cohort study (the FISH study) [25]. The FISH study cohort consists of people

(aged 17 + years) who sustain mild to moderate severity road transport injury (car occupant, motorcyclist, pedestrian, and bicyclist) in the state of New South Wales (NSW), Australia who have been recruited within one month of injury ^[25].

Purposive quota sampling of sex, age, and living arrangements was used to ensure maximal diversity of participants. Recruitment staff were provided with a sampling reference grid (Appendix 1) to assist with the quota sampling process.

Participants were eligible for inclusion in the qualitative sub-study if they were currently enrolled in the FISH study, were aged 65 + years, and had completed either their 12-month or 24-month follow-up interview. Completion of a follow-up interview was required as it was at this time point participants were recruited to the sub-study. Those who agreed to participate were phoned to arrange an interview time. Recruitment continued until thematic saturation was reached and no new themes were emerging from the data. It was estimated thematic saturation would be reached after approximately 10 to 15 interviews.

Data collection

In-depth semi-structured phone interviews were conducted. An interview guide (Appendix 2) was used to ensure all relevant data and areas of recovery were explored. Interviews continued until no new themes were emergent from the data, indicating that thematic saturation had been reached. KB transcribed the first interview and the remaining interviews were transcribed by a professional transcription service. The data were stored on a password-protected secure network drive at The George Institute for Global Health, Sydney.

Data analysis

Transcripts were read line-by-line to become familiar with the data. Information relevant to the aim of the study was then identified and categorised into the ICF categories described above. Given the complex, multi-dimensional nature of recovery, some data was applicable to more than one theme. This was discussed with co-authors and a decision was made to categorise this data to the most dominant theme to ensure the credibility of the analysis. Preliminary themes and patterns occurring within and across categories were identified by the primary author. Methodological rigour and coding consistency were ensured by having a second author cross-check category assignment and preliminary themes. Any discrepancies were discussed until a consensus was reached. The results were presented to the other co-authors for their input and review. Theme development and refinement continued in this iterative ^[61] and collaborative manner until it was evident that thematic saturation had been reached ^[26] and consensus reached on the findings. All co-authors reviewed and provided feedback on the final version of the results.

Reporting results

The study was carried out in accordance with the consolidated criteria for reporting qualitative research (COREQ) 32-item checklist ^[27]. Study findings were reported in the following sections:

- i. Participant characteristics
- ii. Overview of recovery experiences
- iii. Perspectives and themes (reported by ICF concept) ^[22]
- iv. Summary of key findings (Tables 2 and 3)

Results

i) Participant characteristics

A total of 19 eligible participants were approached to participate in the study. Of these, 12 people completed an interview and 7 people did not (4 participants were unable to be contacted after three attempts; 2 declined to participate; and 1 had difficulty hearing over the phone) (Table 1). Thematic saturation was reached by the 12th interview, at which point it became evident no new categories or themes were emerging from the data. Overall the group had a variety of injuries, including limb fractures, musculoskeletal injuries including whiplash, rib or sternum fractures, mild traumatic brain injury (mTBI), and some also experienced persistent psychological impacts such as anxiety, depression and post-traumatic stress disorder (PTSD).

Table 1
Participant characteristics (n = 12)

		N
Sex	Male	5
	Female	7
Age (at injury)	65–69 years	4
	70–74 years	5
	75–79 years	1
	80–84 years	1
	85 + years	1
Marital status	Married / de facto	7
	Divorced / widowed / separated	4
	Never married	1
Education	Secondary	5
	Technical / Other	1
	Tertiary / University	6
Claimed compensation	Yes	5
	No	7
Living alone	Yes	4
	No	7
	Unknown	1
Role in crash	Driver	6
	Passenger	2
	Pedestrian	1
	Cyclist	1
	Motorcyclist	2
Hospitalisation	Yes (> 12 hours)	7
	Emergency Department only	3
	No / not known	2

ii) Overview of recovery experiences

Recovery experiences, trajectories and outcomes were diverse, reflecting the different types of injuries in the study cohort; pre-injury health status, and individual lifestyles and priorities.

Some participants fully recovered from their injuries:

P4 (Female, 70-74 years, fractured sternum)

'I've always felt pretty good... [so]... once I got over the cracked sternum, my life carried on like usual'.

However, for other participants, their injury and recovery experience were life-changing, and resulted in major disruptions to their lives:

P10 (Female, 65-69 years, multiple arm fractures)

'Well, it is all very traumatic having had many surgeries, which was terrifying. I would be in hospital, a long way away from the family... that was a real big problem... I lost my car, it was written off. So, the day that I had the accident I was going to my new unit I had just rented... so I paid rent for six months on a house I never lived in... so it was all pretty crappy'.

The degree of disability reported by participants varied. One participant described major limitation in activities following bilateral soft tissue leg injuries, despite this being a 'minor' severity injury:

P5 (Female, 70-74 years, leg injuries)

'I didn't do hardly any chores or anything in the house because I couldn't move properly. I had to learn to walk again. It took me all my time to - just to do my daily things, like getting up and walking, going to the bathroom to get up and have my shower'.

Recovery issues and priorities changed over time. In general, participants were most concerned with pain management and self-care during the acute recovery phase:

P6 (Female, 70-74 years, fractured ribs)

'My GP said it's [the fracture] on your ribs, they'll just heal between six to eight weeks. And that's what happened. I did go on a lot of medication, it was very painful... But then with the time that went by I got better'.

After the acute recovery phase had passed, participants' priorities turned to resuming pre-injury daily life. Major barriers to further recovery at this time included chronic pain and persistent psychological symptoms.

iii) Perspectives and themes

Five themes were identified in relation to the ICF conceptual model: recovery is regaining independence; injury and disability in older age; the burden of non-obvious disability; the importance of support and positive personal approaches (Figure 1).

Theme 1: Recovery is regaining independence

The majority of participants equated recovery with regaining pre-injury levels of independence, especially with their self-care (including mobility), and being permitted / able to drive again. Thus, regaining independence was a major facilitator of recovery.

Self-care

Participants' experiences of being dependent on others for self-care varied significantly. For some, it was a temporary phase that was a necessary, albeit inconvenient recovery phase:

P11 (Male, 85-89 years, upper limb dislocation)

'I had of course to feed myself with my left hand, do everything with my left hand as I had no capacity in my right hand. But look, I got through that... really it was just a matter of letting it heal... I suppose it was worse for my wife who had to do the driving and do the shopping and things like that.'

However, for others loss of independence in self-care was a longer-term reality that completely disrupted their lives, such as changing living arrangements and a profound sense of loss of control and choice:

P10 (Female, 65-69 years, multiple arm fractures)

'I couldn't live on my own because I couldn't do anything for myself... I couldn't cut my food, I couldn't drive... I couldn't do anything, so I had to go and live with [my daughter] permanently which wasn't my choice.'

Participants did not wish others to complete tasks for them, and preferred to obtain only as much assistance as necessary for them to continue on with completing tasks:

P1 (Male, 70-74 years, whiplash)

'I don't have enough strength in my arm to be able to start the lawnmower, so unless someone comes and starts it for me the lawn doesn't get mowed, you know?'

For some participants, being able to walk independently was a fundamental skill and overlapped with personal factors such as determination and resilience:

P5 (Female, 70-74 years, leg injuries)

'I got up and had my shower each day, very slow, I could hardly walk... I said [to the nurses], "No, I want be independent, I've got to use my legs".'

P5 (Female, 70-74 years, leg injuries)

'I walked around the shops today... [for] maybe an hour and half... I mean the walking's not helping but I think it is helping somewhere inside because it is exercise every day. You need to be able to walk and do those things.'

One participant experienced a (non-traumatic) re-injury, and having coped well following their initial injury, found this unexpected loss of independence confronting, challenging and frustrating:

P2 (Male, 80-85 years, upper & lower limb injuries)

'I hadn't normally until very recently needed help. I was showering, dressing and that sort of thing. But since... the pain and problems have come back... the last fortnight I actually do need a bit of help dressing. Now that's never happened before in my life.'

P2 (Male, 80-85 years, upper & lower limb injuries)

'When you've been just picking up things for 85 years, you know, suddenly to say, "Now don't pick that up, or don't reach for that" it's very, very difficult.'

Driving

Restrictions on driving were difficult to deal with, and returning to driving was synonymous with recovery:

P3 (Male, 70-74 years, head injury)

'I still couldn't drive for about three weeks. They just wanted to make sure that everything was okay... in case there was a recurrence or something, which is fair enough. But it annoyed me because I wanted to drive.'

Another participant was hesitant to drive after their crash, yet saw the value in taking an active approach to regain their driving independence:

P4 (Female, 70-74 years, fractured sternum)

'I felt hesitant the first time because where I lived, I always have to go through this roundabout. So, the very first time, yes, I was a bit hesitant, but I thought, no, I've got to do it. So, I'm just probably a little bit more careful or cautious could I say. But after that I was fine.'

Theme 2: Injury and disability in older age

Participants experienced disruptions to daily activities and social participation as a consequence of their injury.

Daily activities and social participation

Several participants reported physical, psychological, cognitive and/or pain-related difficulties. For some, but not all participants, recovery from injury as an older person presented specific challenges:

P2 (Male, 80-85 years, arm / leg injuries)

'I was already suffering from a neuropathy... and also Parkinson's and so this has really exacerbated it, compounded it... I'm typing [on the computer] instead of writing... fortunately the brain is still reasonably accessible.'

P1 (Male, 70-74 years, whiplash)

'It's getting harder to do [social activities and sport] because, I mean I do catch up with them, like for a barbecue and things like that, but it's not the same sort of situation where we used to go out and we – we play a round of golf and have two beers and come home and things like that.'

Residual physical limitations were mostly acceptable, provided functioning returned to sufficient levels to complete pre-injury tasks, even if slight limitations remained; and adapting or modifying ways of doing things were common. Recovering the majority of pre-injury physical functions and fitness was a major facilitator of recovery, and was seen as a milestone in recovery that brought a sense of happiness and satisfaction:

P11 (Male, 85-89 years, upper limb dislocation)

'Really, I mean, I'm now doing everything... I'm not terribly good on managing a crowbar these days and digging a deep hole, but otherwise I'm doing everything.'

Chronic pain

Chronic pain impacted heavily on health-related quality of life where activities of high value to the individual were affected, for example, caring for grandchildren:

P10 (Female, 65-69 years, multiple arm fractures)

'So you can't hit my arm and it's really painful... I couldn't drive for six months... I couldn't lift the grandchildren... that was a huge problem and it still extremely hurts when I lift them on my arm.'

In contrast, a participant felt that pain in older age was something to be accepted:

P6 (Female, 70-74 years, fractured ribs)

'I do have pain, but you know, I am at an age now, that you can't do without any pain, but I would say it's got nothing to do with that [the injury].'

Work, retirement and economic self-sufficiency

Whilst some participants were retired, two female participants, both of whom lived alone, each experienced negative impacts on work. One participant described accelerated retirement as they were physically unable to resume their usual work in two different roles and carer for grandchildren:

P10 (Female, 65-69 years, multiple arm fractures)

'I am not quite sure what retirement means. I tend to do more than I ever did but I have retired... [the injury] accelerated it. Yeah, I wouldn't have [retired] because I was actually working with my daughter and minding the children and doing other things and that stopped me from doing that.'

Whilst the other participant resigned from their job. Whilst there were other factors at play here, returning to work with physical and significant psychological symptoms appeared to one catalyst for suddenly resigning:

P12 (Female, 65-69 years, fractured sternum, whiplash, psychological impact)

'I had a mortgage and I'm on my own, so I had to go back earlier... It just got to the point where I felt totally burnt out.'

Financial concerns around paying off a mortgage were also an issue:

P12 (Female, 65-69 years, fractured sternum, whiplash, psychological impact)

'When I went back to work after my accident, the fear was, oh my God, I have to pay this mortgage off, and I'm going to pay it, it's not much, but I had to pay it off, and I did.'

Other symptoms

One participant expressed concern that her ongoing symptoms could in fact be due to age-related cognitive decline:

P8 (Female, 75-79 years, head injury, arm movement limitation)

'When I'm doing something, I can remember what I'm doing, but given half an hour, nowadays, I've forgotten it... that's why I thought I had Alzheimers and I wanted the test.'

Theme 3: The burden of non-obvious disability

Persistent psychological symptoms

Psychological symptoms were common and varied, ranging from temporary to persistent, and from transport-related to more general in nature.

P1 (Male, 70-74 years, whiplash)

'I also don't drive a car anymore. I'm just paranoid about driving a car and I won't sit in the back of a car.'

P5 (Female, 70-74 years, leg injuries)

'I was scared when my husband was driving. I don't know whether it was me or - I don't know... I was quite scared'.

P7 (Female, 65-69 years, mild traumatic brain injury)

I really don't like thinking about it, you know. It's had a psychological impact ... quite probably a significant psychological impact'

Two participants reported long-standing consequences from soft tissue injuries that had not been major concerns at the time of injury or shortly thereafter:

P8 (Female, 75-79 years, head injury, arm movement limitation)

Oh, one of the things that's really important and I don't know why or anything but since the injury my right shoulder, I can't lift my arms very well. Yeah, that didn't appear to be injured in the accident'.

For one of the participants, they had closed their claim, however their symptoms persisted:

P12 (Female, 65-69 years, fractured sternum, whiplash, psychological impact)

'When I came home, I had a bit of stiffness in my neck... I didn't really worry about it too much... I thought no, my neck will settle down. But I found over the last two years it's [my neck] gradually getting worse'

Theme 4: The importance of support

Family, friends and community members

Practical and emotional support from family was highly valued and appreciated, and an important facilitator of recovery:

P10 (Female, 65-69 years, multiple arm fractures)

'It's good to have support, that's the main thing. I feel sorry for people that don't have support... I have a daughter who was wonderful... so, I had that support with her and I had some nice friends around that gave me support. That helped a lot'.

Some participants were concerned about the carer burden for their spouse:

P2 (Male, 80-85 years, upper & lower limb injuries)

'It has been a big change [for my wife]. Obviously, it's been a worry... she does drive me around more than she used to... [and] she's been helping me with getting my shirt on and everything'

Friends were also valuable sources of practical, and much appreciated support:

P4 (Female, 70-74 years, fractured sternum)

'I suffer from benign vertigo and I'd been bending over, packing a lot of boxes and I kept having minor attacks of it... I had a friend, they would stand me up beside a chair with a box on it and they'd put everything on the table so I wouldn't have to bend over and I wouldn't have to lift... it was really lovely.'

Participants were very positive about assistance offered by community members as they were out and about:

P2 (Male, 80-85 years, upper & lower limb injuries)

'I've found people very, very helpful actually... on one occasion someone came up to me and said, "I've seen you standing there for a while. Do you need any help?"'

Health professionals

Overall participants were satisfied with the care they received in the Emergency Department or as an admitted patient, especially from the nursing staff. One participant expressed frustration that her questions to hospital doctors about her injured legs were repeatedly dismissed:

P5 (Female, 70-74 years, leg injuries)

'[I injured] my legs which [the doctors] never, ever did a thing for in hospital. All they were worrying about was the other injuries that weren't visible... they said "Don't worry about [your legs], that's your last problem". I thought it is not the last problem, if there's nothing wrong with my heart, I need my legs... I think if I'd had treatment on my legs earlier I wouldn't be in this pain and suffering now.'

Some participants described difficulties seeking and obtaining support from their General Practitioner for ongoing health concerns related to their injury:

P7 (Female, 65-69, mild traumatic brain injury)

'[Psychologically] I think there's stuff lingering there. Yeah, I think there's an aftermath. [I'd prefer to] just not think about it. There's nothing he [GP] could do. [Laughs] there's nothing he would do.'

P8 (Female, 75-79 years, mild traumatic brain injury, arm movement limitation)

'Oh, one of the things that's really important and I don't know why or anything but since the injury my right shoulder, I can't lift my arms very well. Yeah, that didn't appear to be injured in the accident... [my GP is] a good doctor but he doesn't seem to think that women are very useful [laughs]'

On the other hand, participants who sought therapy or treatment with other health professionals found it to be beneficial:

P1 (Male, 70-74 years, whiplash)

'just after the accident I had quite a few falls... I went to Stepping On and did that program and I've only had one fall since then.'

P2 (Male, 80-85 years, arm / leg injuries):

'it did affect my attitude crossing the road, and particularly in crowds.... the insurance company has paid for some counselling..... so I'm not too bad there.'

Compensation system

Our study included participants regardless of their compensation status, that is, those who lodged a claim, those who did not lodge a claim but were eligible to, and those who did not meet the criteria for lodging a claim. To avoid pre-conceived ideas by the interviewer, the compensation status was not sought prior to the interview. However, if the participant mentioned they had lodged a claim they were encouraged to discuss this further if they wished. Of the few participants who mentioned they had a claim, most mentioned in passing that their claim had been accepted. One participant's experience was a protracted, inefficient and frustrating claims process that was yet to be resolved, despite ongoing chronic pain that had been previously successfully managed with regular physiotherapy:

P1 (Male, 70-74 years, whiplash)

'It was just an annoying pain continuously.....the insurance company agreed to physio, and then they cut the physio out and I've been in pain ever since... my solicitor said everything should be straight forward, that they were making a claim and I should get money to go and continue with physio.'

Dislike of medicolegal assessments was expressed.

P1 (Male, 70-74 years, whiplash)

'[One thing that I will say, I'm very annoyed with the other driver's insurance company]...[they] sent me to see another orthopaedic surgeon and he said there was problems on... not the left hand side but the right hand side, which was totally not right... and now... I got a letter I've got to see another orthopaedic surgeon. And then a psychologist'

Another participant raised the issue of out-of-pocket expenses for taxis that were not directly related to medical appointments, but had become necessary due to the physical limitations that were a consequence of their injury:

P2 (Male, 80-85 years, arm / leg injuries)

'When I'm out socially I find I'm using taxis quite a lot. Which is a bit of an expense. So anything to do with the accident I can claim back. But going off to do a bit of ordinary shopping I can't obviously.'

Transportation services

Participants who used public transport regularly were happy with the availability of services:

P1 (Male, 70-74 years, whiplash)

'It's all public transport or my wife will drive me or my step-daughter or my daughter will come and pick me up... if they are not available I just get public transport. It's only about a six minute walk to the railway station. And there's plenty of buses around'.

P2 (Male, 80-85 years, upper & lower limb injuries)

'Where we live it's quite well served by buses'

One participant did encounter challenges using public transport with a physical disability, however was solution-focused and kept a sense of humour about their experience:

P2 (Male, 80-85 years, upper & lower limb injuries)

'if it [the bus] stops at the normal stops it's not a big problem. But the other day... I ended up being hauled into the bus by the bus driver and pushed into the bus by a passer-by... yes, it's not too good for morale that. But it does work'.

Theme 5: Positive personal approaches

Positive personal and / or psychological resources were important facilitators of recovery that also served as coping mechanisms in managing the experience of the injury itself and the recovery process (Table 2). The most prominent resources from the participants' perspectives were determination: both to recover and to not let the injury stop them from living life; resilience; pragmatism; active coping strategies, e.g. adoption of physical and psychological adaptations and 'work-arounds' in order to regain functioning; being physically active; focusing on incidental positive outcomes (e.g. moving closer to family); selflessness; stoicism; realistic optimism; not taking oneself too seriously; a good sense of humour; being goal-directed; taking responsibility for one's own recovery and health, and a positive attitude towards life in general (Table 2).

Table 2

Examples of positive personal approaches that were facilitators of recovery

Positive personal approaches	Example
Stoic, sense of humour	P7 (Female, 65–69, mild traumatic brain injury) 'They said [in the Emergency Department] the problem is I am too stoic. So that can really be against you [laughs]. It really can. I often resent wearing [helmets] but I feel like framing that one [laughs]'.
Resilient, adaptable, pragmatic, sense of humour	P9 (Male, 65–69 years, chest injuries) 'I know they [ribs] are there but I wouldn't class it as pain... in the end you just do things that you know you can do. I can't work as hard as I could, but I do what I have to do... I just discourage people giving me big hugs'.
Reflective, selfless	P2 (Male, 80–85 years, upper & lower limb injuries) 'At the time I thought things weren't too bad. And it's interesting to me that I totally underestimated how much this had affected me. On the other hand, having laid in hospital beds for a while and looked at other people, I'm not too bad'.
Resilient, adaptable; focus on abilities rather than limitations	P9 (Male, 65–69 years, chest injuries) 'I don't employ anyone. There were lots of jobs I could do even straight away... at certain times, different times [my injuries] affect me a fair bit but basically, I'm back to full work'.
Resilient, stoic, adaptable, pragmatic, takes responsibility for recovery	P9 (Male, 65–69 years, chest injuries) So-called pain killers, I just went off them as quick as I could a long way short of what some people would because I just got the shits with [the] up and down feeling... [you don't need] pain killers you just do things that doesn't hurt... I've never been a great believer in pain killers.
Focus on the positive outcomes from the injury experience	P10 (Female, 65–69 years, multiple arm fractures) 'For the first time I was just going to make sure I had my own place and yeah so pretty exciting. I got all new furniture and everything and I never lived there... I am back now and have family all around me now... so it worked well, I suppose'.
Resilient, determined, pragmatic, realistic optimism	P10 (Female, 65–69 years, multiple arm fractures) 'It is just sort of like watching and being aware. You are always aware... so it's always on your mind but it won't stop running my life. [We] have to live, don't we? At least I didn't have any other serious injuries. I just have lots of scars up my arm, that's all'.
Resilient, determined, independent, stoic	P10 (Female, 65–69 years, multiple arm fractures) 'I mean I do a lot of walking, but you are always very cautious of not tripping. So it hasn't stopped me from doing anything that I want to do. Not anymore'.

iv) Summary of key findings

Table 3 shows key facilitators and barriers to recovery and health-related quality of life, and corresponding ICF concepts and themes.

Table 3

Summary of themes, facilitators and barriers for older people recovering from road injury

ICF concept	Example		Themes
Functioning, activities and participation	P5 (Female, 70–74 years, leg injuries) 'After I got my licence and I was able to drive around it, like, got back to normal almost straight away'.	Facilitators Returning to driving; regaining independence in self-care, mobility & transportation; resuming usual daily activities	1. Recovery is regaining independence
	P5 (Female, 70–74 years, bilateral leg injuries) 'I had to rely on him [my husband] to drive me anywhere and everywhere. It's terrible when you've been independent, you know... so I was very relieved that I actually got my licence back again'.	Barriers Lack of independence with self-care and transportation	
	P1 (Male, 70–74 years, whiplash): 'I used to go and play golf three times a week and I would play tennis on a Sunday. Since the time of the accident I haven't been able to do any of that'.	Barriers Activity limitations and social participation restrictions with usual daily activities and pre-injury lifestyle	2. Injury and disability in older age
	P10 (Female, 65–69 years, multiple arm fractures) [The main issue] I think it's the pain. It's really just that. It hurts. I think it's going to hurt for the rest of my life. The same as I suppose having something [like] arthritis or whatever, it is something you have to live with isn't it?	Barriers Chronic pain; persistent psychological symptoms; passive coping strategies; reduced pre- and/or post-injury mental health	3. The burden of non-obvious disability
Environmental factors	P5 (Female, 70–74 years, leg injuries) 'My husband's a fantastic partner. He's absolutely been beautiful to me. He's just been brilliant. Without him, I wouldn't have been here, I would have been in care or something, you know'.	Facilitators Practical support from family and friends; timely and effective treatment	4. The importance of support
	P5 (Female, 70–74 years, leg injuries) I got to my doctor [GP] and he says, "Don't worry about your legs." I do worry about my legs because I'm getting older and my legs support me. If your legs aren't good, well, you're not going to be moving around, are you?	Barriers Reluctant to raise concerns with GP; unclear recovery expectations	

ICF concept	Example	Facilitators	Themes
Personal factors (see also Table 3)	P11 (Male, 85–89 years, upper limb dislocation) 'I think I'm pretty lucky because I've always had a very active lifestyle...and so I'm now back to swimming... I've made a very, very good recovery. A lot of determination going into recovering to where I was before, but if you don't do it, well, you'll pay for it'.	Resilience, determination; active coping strategies; physical fitness; goal-oriented; sense of humour; reflective	5. Positive personal approaches

Discussion

Our study explored older peoples' perspectives, and factors related to recovery and health-related quality of life following a mild to moderate severity road injury in older age.

Five themes were identified: recovery is regaining independence; injury and disability in older age; the burden of non-obvious disability; the importance of support, and positive personal approaches. These themes coincidentally aligned with the key facilitators (regaining independence, support, positive personal approaches) and barriers (the presence of non-obvious disability, support barriers) to recovery and health-related quality of life identified in our analyses.

Several of the findings from our study are consistent with those of studies that investigated road injury recovery in older people treated in the ED such as persistent pain, psychological injury, activity limitations, difficulties with activities of daily living, and changes to living situation [14–16]. Our findings also shared commonalities with RTI recovery studies in general adult populations, especially the importance of social support from family and friends; difficulties with loss of independence [28]; negative impacts on recovery due to chronic pain, anxiety and depression [19]; difficulties with independent self-care and /or domestic life, and reduced participation in recreational activities [19].

Two notable findings from our study have also been reported in the UK Impact of Injuries Study: difficulties with seeking and obtaining post-acute care and also with obtaining support from GPs for psychological symptoms [29]; and the extent of the major disruption the injury caused to all aspects of everyday life [30]. Our findings also shared some similarities with those of recovery from serious injuries, such as a positive and resilient attitude being a major facilitator of recovery [31]; an active (rather than a passive) approach to rehabilitation being beneficial to quality of life and functioning [32], and negative impacts of injury on work and financial situation [33].

Our study revealed that whilst older people may share some similar recovery issues with younger people, each age group prioritises their recovery issues differently. For example, in younger people returning to work, recovering pre-injury physical health, mental health and financial stress are crucial to recovery. Our

findings suggest that this is not the case for older people, whose primary concerns are around threats to independence. Older people also viewed positive personal approaches as integral to recovery.

Threats to independence identified by participants included not being able to drive, dress, eat or live independently, that is, any situation that resulted in a loss of autonomy in daily life. This finding is consistent with research into quality of life in older people by Ratcliffe et al., which found older people identify independence and control over daily life as particularly important to their quality of life ^[34]. An unexpected yet important finding of our study was the high value placed on regaining independence: it was considered far more important to recovery and health than regaining physical health. In fact, participants reported that incomplete physical recovery was acceptable if they could resume their pre-injury levels of functioning in daily life, even if adaptations or modifications were required, or the level of functioning was not quite as good as it was prior to injury.

Participants demonstrated a wide variety of positive personal approaches that strongly facilitated self-reported health and recovery, such as resilience, pragmatism, stoicism, a meaningful life where individuals contributed to society or helped others, a goal-oriented approach to recovery, being physically fit prior to injury, a strong determination to recover and often strong intrinsically motivated to recover. Furthermore, active coping strategies were mostly self-initiated without external guidance or support. This finding is consistent with evidence on resilience in older age, i.e. psychological resources such as having a higher sense of purpose in life; an optimistic outlook; a sense of control, and a flexible coping style able to persist with attainable goals, or redefine or replace unattainable goals ^[35].

In our study it was unclear whether resilience was associated with equity and socioeconomic status. Similarly, evidence on equity and resilience in the general older population is also mixed: Windsor et al. reported social disadvantage as a key risk factor for resilience ^[35]; whereas Netuveli et al. found people aged 50 or more years who were resilient were more likely to have high social support than the non-resilient, but were otherwise not different socioeconomically ^[36].

Further insight into why the participants in our study appeared to cope well despite residual health issues is provided by a study by Mosser et al., which found older patients with heart failure reported better health-related quality of life compared to younger patients, that was not related to actual physical health, rather it was largely driven by changing expectations with advancing age as to what constitutes good health-related quality of life ^[37].

Our findings also share similarities with qualitative studies of recovery from hip fracture in older age. Pol et al. found that a positive attitude, strengths-based approach and emotional support was particularly beneficial for recovery from hip fracture ^[38], whilst Young et al. investigated functional recovery one year after hip fracture and found self-determination played a significant role in making rehabilitation work ^[39]. Our findings are also consistent with evidence that resilience is a protective factor in people aging with a disability ^[40].

Establishing that our findings share many similarities with studies on injury recovery, disability and health-related quality of life in older age beyond transport-related injuries is an important finding, as it suggests opportunities exist to transfer well-established evidence from the wider literature to the specific issue of recovery from RTI in older age. This is especially the case for existing evidence on recovery from hip fracture, which could be applied to RTI in older age in the development of strategies and support to optimise health outcomes. Furthermore, utilising existing evidence (where appropriate) is more time and cost-effective than undertaking new studies.

Given independence is crucial to older peoples' recovery and health-related quality of life following road injury, greater efforts are needed to help older people regain independence in physical and psychological functioning, driving, and / or living arrangements that allow for independent living without driving. Such efforts could include educating health professionals on the high priority older people place on independence compared to physical functioning; provision of appropriate services and identifying and minimising potential costs for those without insurance.

Strengths and limitations

Our study has several strengths: Participants were purposively selected from a representative population of a large, population-based inception cohort study; interviews took place more than one year after their injury, meaning that all participants' had experienced the acute, post-acute and rehabilitation recovery phases prior to being interviewed and could therefore speak about their entire recovery journey; and ours is the first study of its kind to qualitatively explore mild to moderate transport-related injuries, recovery and health outcomes in older age.

Our study did however have some limitations: our purposive sample was relatively small ($n = 12$, although interviews were carried out until thematic saturation was reached); the 'young-old' aged 65–74 years were over-represented; and there was a mix of claimants and non-claimants. The latter was unavoidable, as in our population-based cohort study some participants were eligible to claim, whilst others were not, plus only some of those eligible to claim had actually done so. Given most of the participants were retired and none sustained injuries that met eligibility criteria to apply for loss of income (pecuniary losses), the effect of compensation on recovery in this group could be reasonably expected to be much less than in the working age population.

Conclusions

Our study explored perspectives and factors related to recovery and health-related quality of life following a road injury in a purposive sample of older people aged ≥ 65 years and found a diverse range of types of injury, recovery experiences and long-term health outcomes. For some participants their injury was a minor event and temporary inconvenience, however for others it was life-changing and caused major disruptions to their lifestyle.

Five themes were identified: recovery is regaining independence; injury and disability in older age; the burden of non-obvious disability; the importance of support and positive personal approaches. Immediately after the injury, participants were most concerned with pain management and self-care, especially eating and dressing. Later, priorities turned to resuming pre-injury daily life.

Major barriers to recovery were threats to independence issues (especially driving and self-care), chronic pain and persistent psychological symptoms. Major facilitators of recovery were regaining independent functioning and positive personal approaches.

Older peoples' recovery outcomes and health-related quality of life following road injury are improved by regaining independence. Greater efforts in helping older people regain independence are needed, and can be facilitated by health professionals' attitudes, appropriate service provision and systems designed with this outcome in mind.

Abbreviations

COREQ	The Consolidated Criteria for Reporting Qualitative Research (COREQ).
ED	Emergency Department
FISH	Factors Influencing Social and Health Outcomes following road transport injury inception cohort study
GP	General Practitioner
ICF	International Classification of Functioning, Disability and Health
NSW	New South Wales
mTBI	Mild traumatic brain injury
PTSD	Post-traumatic stress disorder
WHO	World Health Organisation

Declarations

Ethics approval and consent to participate

Approval to undertake the study was obtained from the State Insurance Regulatory Authority (SIRA) (formerly known as the NSW Motor Accidents Authority (MAA)) and the University of Sydney Human Research Ethics Committee.

Consent for publication

Participants had previously provided consent to the main FISH study. Consent to participate in the qualitative sub-study was obtained prior to interview.

Availability of data and materials

The raw study data is not available as it contains potentially identifiable and sensitive information.

Competing interests

The authors declare they have no competing interests.

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Authors' contributions

KB, IC, RI, LK: study concept and design; KB: acquisition of data; KB, LD: data coding; KB, IC, LD: data analysis; KB, IC, LD, RI, HN: interpretation of results; KB, HN, RI, IC: draft manuscript; IC, LK, HN, RI: supervisor input and feedback. All authors reviewed and approved the final manuscript.

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Figures

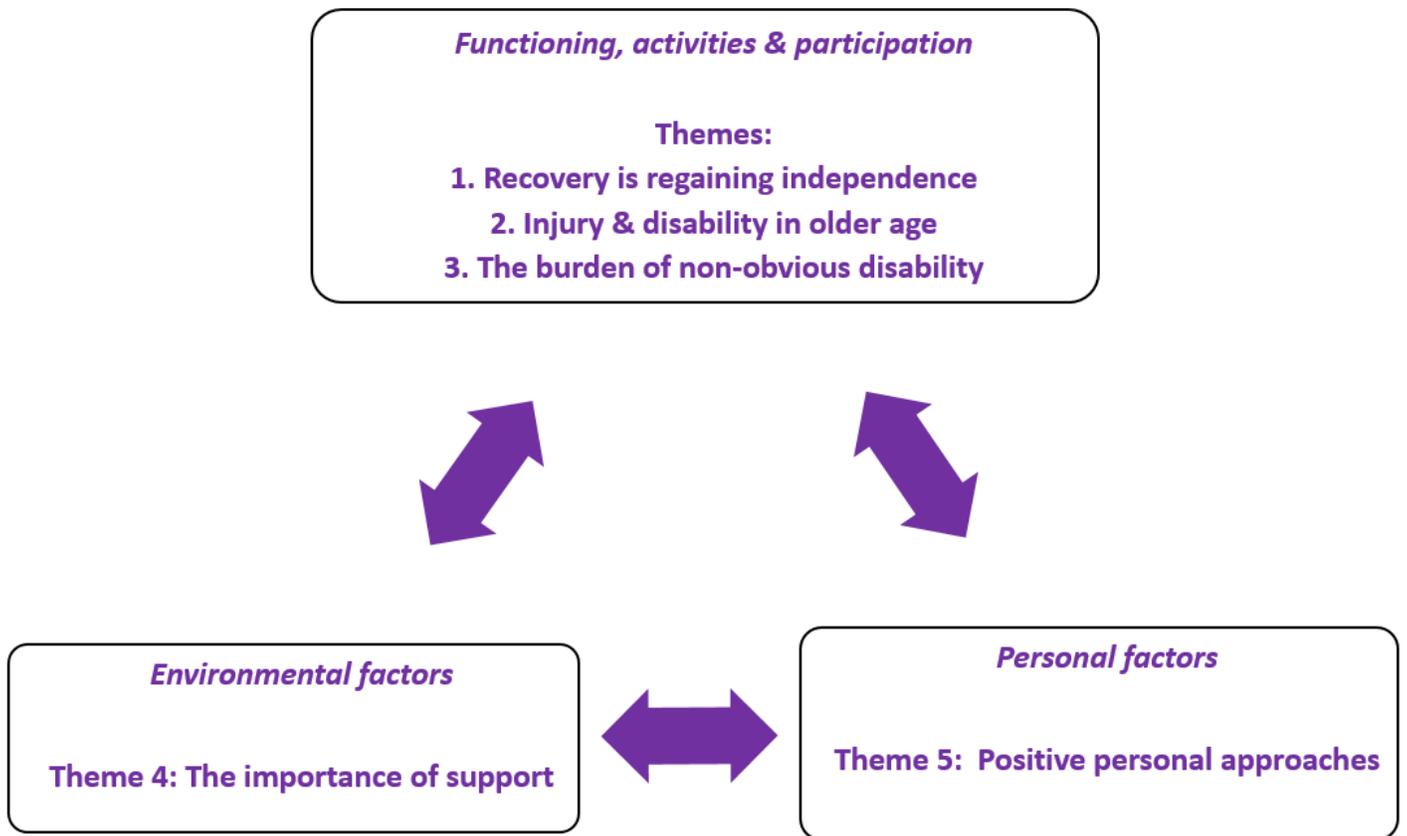


Figure 1

Conceptual map of ICF concepts and themes for older peoples' views on recovery and health-related quality of life following road transport injury