The relationship between employment and social participation amongst Australians with a chronic health conditions: a cross-sectional analysis

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Complete List of Authors:	Callander, Emily; University of Sydney, NHMRC Clinical Trials Centre Schofield, Deborah; University of Sydney, NHMRC Clinical Trials Centre
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ARTICLE SUMMARY

Article Focus

- Does labour force participation influence the likelihood of an individual with poor health engaging in social events.

Key Messages

- People with a chronic health condition in the labour force were 2.1 times more likely to be participating in social events
- People with a chronic health condition in the labour force were 1.9 times more likely to be participating in cultural events

Strengths and Limitations

- A limitation of this study is that it was conducted using cross-sectional data.

ABSTRACT

Objectives

Social interaction may be particularly important for people with poor with chronic health conditions, due to the numerous benefits to an individual's health. This paper aims to determine if labour force participation is a factor that influences individuals with chronic health conditions partaking in social or cultural events.

Design and setting

The study undertakes cross-sectional analysis of *2009 Survey of Disability, Ageing and Carers*, a nationally representative survey of the Australian population.

Participants

5 775 records of persons aged 25 to 64 years who had a chronic health condition stated that their condition was disabling.

Outcome measures

Participation in social and community activities.

Results

It was found that after controlling for age, sex, level of highest education and severity of disability people with a chronic health condition that were in the labour force were more than twice as likely to be participating in social or community events (OR: 2.66, 95% CI: 2.06 – 3.44), and in cultural events (OR 2.59, 95% CI: 2.22 – 3.01) as their counterparts who were out of the labour force. The results were then repeated, with the addition of income as a confounding variable. People with a chronic health condition that were in the labour force were still a little more than twice as likely (OR 2.09, 95% CI: 1.49 – 2.94) to be participating in social or community events, and 1.88 times as likely (OR 1.88, 95% CI: 1.56 – 2.27) to be participating in cultural events as their counterparts who were out of the labour force.

Conclusion

Participating in the labour force may be an important driver of social participation amongst those with poor health, independent of income. People with poor health who are not in the labour force and do not participate in social or cultural activities may have compounding disadvantage.

Introduction

Participation in social events and having access to social networks has been recognized to produce numerous health benefits. Some studies have documented the improved survival rates associated with social activities [1-4] – with one study finding that social activities had similar survival advantages as exercise activities [2]. Similarly, social participation has been associated with lower chronic disease rates [5], including positive outcomes relating to cardiovascular, endocrine and immune systems [6], improved quality of life and better overall mental wellbeing [7-8].

The explanation for these health benefits are complex and diverse, and range from social support being linked with lower likelihood of chronic disease risk factors such as smoking and lack of exercise, to the tangible benefits such as help in times of need, to biochemical explanations such as level of fibrinogen and catecholamine, and social contact reducing stress by enhancing cellular and humoral immune responses [5-6]. Regardless of explanation, this past research has highlighted the importance of social networks and socialising for those with poor health.

It is known that labour force participation has been linked with higher rates of social inclusion [9-11], therefore participating in the labour force may be an important factor in facilitating participation in social activities. Given the high chance people with chronic health conditions have of exiting the labour force – with one Australian study finding that over half of 45 to 64 year old Australians with a chronic health condition were not in the labour force [12] – it may be likely that people who have had to retire early due to their ill health may also be excluded from social activities and may be missing out on the associated health benefits

This paper will explore the relationship between participating in the labour force and participation in social, community or cultural activities amongst Australians aged 25 – 64 years with a chronic health condition. We will examine whether people with a chronic health condition who are in the labour force are more likely to participate in social and community activities than those who are out of the labour force.

Methods

This study was conducted using the *2009 Survey of Disability, Ageing and Carers* (SDAC), a nationally representative survey of health and disability conducted by the Australian Bureau of Statistics [13]. The 2009 SDAC had a response rate of 89.9%, with 28,474 households participating, and 64,123 fully responding persons. The data is weighted such that the weight assigned to each survey record provides an estimate of the number of similar individuals in the Australian population [13]. This allowed nationally representative results to be produced.

Measure of social participation

Respondents in the 2009 SDAC were asked about their participation in social or community activities away from home in the three months prior to the interview and their culture or leisure activities in the 12 months prior to the interview. Social or community participation away from the home consisted of either visiting relatives or friends or a restaurant or club, or participating in church, voluntary, performing arts groups, art or craft group or other special interest group activities, or other activities not specified. Cultural or leisure activities consisted of either visiting a museum, art gallery, library, animal or marine park, or botanic gardens, or attending theatre, a concert, cinemas, or sports event as a spectator, or taking part in a sport or recreation activity.

Controlling for income

It is possible that those in the labour force may have higher rates of social participation as their employment income may give them the financial capacity to do so. It has been found that in a number of European countries those who experience long term unemployment have less chance of meeting with friends and participating in social clubs or organizations, and the authors theorised that this could be due to financial difficulties in maintaining relationships [11]. In Australia, Saunders reported that 16% of households could not afford to participate in social activities [14], and Berry has also speculated on the restrictions lack of financial resources play on social and community participation [15]. As such, labour force participation could facilitate social and community

participation as it merely provides the financial capability. Due to this possibility, the results will be controlled for the influence of personal income.

Statistical Analysis

The study was limited to people aged 25 to 64 years who had a chronic health condition and indicated that their condition was disabling (some chronic health conditions may not actually have any disabling affects on patients, such as mild asthma). The study compared individuals within this population who were in and out of the labour force, with 'in the labour force' being defined as being employed full time, employed part time, or looking for full time or part time work.

Descriptive analysis was undertaken to look at the proportion of people with a chronic health condition who were in the labour force and the proportion of people who were out of the labour force in different age groups and by gender. The different rates of participation in social or community activities and cultural or leisure activities was then compared for those with a chronic health condition who were in the labour force and those who were out of the labour force.

Logistic regression models were then constructed to look at the odds ratio of participating in social or community activities and cultural or leisure activities for those with a chronic health condition that were in the labour force compared to those out of the labour force. The models were adjusted for age, sex, level of highest education and severity of disability. A sensitivity analysis was conducted to control for the impact of personal income. The logistic regression models were repeated with the inclusion of personal income decile. The analyses were undertaken using SAS V9.1 (SAS Institute Inc., Cary, NC, USA). All statistical tests were two sided with the significance level set at 5%.

Results

In the 2009 SDAC there were 5 775 records of persons aged 25 to 64 years who had a chronic health condition stated that their condition was disabling. Once weighted, these data represented 1 919 900 individuals in the Australian population in 2009. Over half, 54 per cent, of people with a chronic

health condition that was disabling were in the labour force (1 043 500 individuals), and 46 per cent were out of the labour force (876 400 individuals).

Table 1 shows the number of individuals with a chronic health condition that was disabling who were in the labour force and out of the labour force by their age and sex characteristics. Sixty percent of males with a chronic health condition were in the labour force, whereas 48% of females with a chronic health condition were in the labour force. The majority of those aged under 55 years were in the labour force, but the majority of those aged 55 years and over were out of the labour force.

Table 2 shows the proportion of people that were participating in various social activities amongst those with a chronic health condition that was disabling who were in and out of the labour force. A lower proportion of people with a chronic health condition participated in cultural or leisure activities than in social or community activities.

Almost all of the people in the labour force with a chronic health condition participated in a social or community activity, whereas only 88% of those not in the labour force with a chronic health condition did so. A higher proportion of people in the labour force with a chronic health condition participated in cultural or leisure activities than people not in the labour force with a chronic health condition. Over one-third of those out of the labour force with a chronic health condition had *not* participated in a cultural or leisure activity in the past twelve months in 2009.

When adjusting for age, sex, level of highest education attainment and severity of disability there was found to be significant differences in the experience of social contact between those in the labour force with a chronic health condition and those out of the labour force with a chronic health condition. Those in the labour force with a chronic health condition were more than twice as likely to be participating in social or community activities away from the home compared to those not in the labour force with a chronic health condition (OR: 2.66, 95% CI: 2.06 – 3.44, p<.0001). Those in

the labour force with a chronic health condition were 2.59 times more likely to have participated in cultural or leisure activities away from the home, than people with a chronic health condition that were out of the labour force (OR 2.59, 95% CI: 2.22 – 3.01, p<.0001).

Sensitivity analysis

When adjusting for personal income as well as age, sex, level of highest education attainment and severity of disability there was still a significant difference in the experience of social contact between those in the labour force with a chronic health condition and those out of the labour force with a chronic health condition. After adjusting for income, those in the labour force with a chronic health condition were still more than twice as likely to have participated in social or community activities away from the home compared to those not in the labour force with a chronic health condition (OR: 2.09, 95% CI: 1.49 – 2.94, p<.0001). Those in the labour force with a chronic health condition were now 1.88 times more likely to have participated in social or community activities away from the home, than people with a chronic health condition that were out of the labour force (OR 1.88, 95% CI: 1.56 – 2.27, p<.0001).

Discussion

As the authors expected, amongst people with poor health, people who were in the labour force were more likely to participate in social and cultural activities, even after controlling for the influence of personal income. In this study, the authors controlled for the effects of more severe disabilities and level of personal income, indicating that labour force participation may have unique benefits that foster participation in social activities.

The economic benefit of labour force participation for people with a health condition has been well established. It is known that those who retire early due to ill health have a lower income, lower amounts of accumulated wealth and will reach the age of 65 years with lower amounts of savings to support their retirement than those who remain in the labour force [16-22]. However, this study has

shown that there are additional social benefits of remaining in the workforce that are independent from the economic benefits.

Causality

A limitation of this study is that it was conducted using cross-sectional data. As a result of this, only the relationship between labour force participation and participation in social and cultural activities amongst those with a chronic health condition could be assessed. While participating in the labour force may facilitate social and cultural participation amongst those with a chronic health condition, it is also possible that participating in social and cultural activities may facilitate labour force participation amongst those with poor health.

It has been theorised that being part of a social network gives members access to 'social leverage' – a form of social capital that is generated by the network of people. Social leverage helps members of a network to access information to improve their social position, such as details of employment opportunities or job referrals. However, access to this information is usually limited to members of the social network [23]. Developing a chronic health condition may result in individuals developing limitations that may restrict the type of tasks they can perform. This may require people to change jobs or industries to find employment that provides suitable working conditions. As such, being part of a social network may increase chances of labour force participation amongst those with poor health. However, despite theories that link social networks and finding employment, a longitudinal study of European Union countries reported no link between social networks and finding employment [24]. It may be quite possible that labour force participation does facilitate social participation, rather than the other way around.

Health Implications

Regardless of causality, those with ill health who are out of the labour force have lower rates of social and community participation, and thus may be forgoing the health benefits social participation provides. Social capital – which includes, but is not limited to, social participation – is linked to health

outcomes [25-26]. Berry [27] has looked at the relationship between social capital and health in Australia and found that informal social connections and civic engagement were linked to better health outcomes. Informal social connections and civic engagement broadly align with the variables of social participation utilised in this study. Furthermore, social participation in general has been linked with better health outcomes for individuals [1-8].

Those with ill health who are not in the labour force and do not participate in social or cultural activities may have compounding disadvantage. Participating in the labour force is known to have its own health benefits, particularly on mental wellbeing. The causal relationships between unemployment and health were highlighted by a longitudinal British study in the 1980s [28-29] with Australian studies later also demonstrating the adverse impacts of unemployment on the mental health of young people [30-32]. Poorer mental health has been a feature of the research on unemployment and health, with a study from the United States of America of men aged 35-60 years reporting higher rates of depression and anxiety after becoming unemployed [33] and a reported higher rate of psychological distress amongst German men over the age of 45 years which was ameliorated by re-employment [34]. In light of this association, people who are not in the labour force and not participating in social events may experience a further deterioration of the health and may be more susceptible to developing co-morbid mental health conditions.

The health benefits of social participation have been well documented [1-8]. However, people with poor health may have limited exposure to social activities and social interaction due to low rates of labour force participation. This study has shown that people with ill health are less likely to be participating in social and cultural activities. As such, participating in the labour force may be an important driver of social participation amongst those with poor health.

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Author Contributions

EC conceived the study, carried out the data analysis and drafted the manuscript. DS provided expert advice into the design of the study and the interpretation of the results, and contributed to the final manuscript.

Ethics Approval

The use of this data was approved by the Australian Bureau of Statistics.

Data sharing

The data used in this study, which came from the *2009 Survey of Disability, Ageing and Carers*, is publically available through application to the Australian Bureau of Statistics.

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Table 1: Labour force status of 25 to 64 year olds with a chronic health condition that was disabling by age and sex, Australian population 2009

	In the labour force	Not in the labour force
Gender		
Male	563 200	366 400
Female	480 300	510 100
Age		
25 – 29	86 200	37 000
30 – 34	82 000	46 000
35 – 39	124 300	69 800
40 – 44	127 100	62 900
45 – 49	152 000	94 900
50 – 54	165 300	113 500
55 - 59	168 700	182 800
60 - 64	137 900	269 600

Table 2: Proportion of individuals with a chronic health condition that was disabling, in and out of the labour force, participating in social activities, 2009

	Participating in social or community activities away from home		Participating in cultural or leisure activities away from home		Total
	N	*%*	*N*	*%*	
In the labour force	1 001 700	96%	886 100	85%	1 043 500
Not in the labour force	771 600	88%	535 000	61%	876 400

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- Does labour force participation influence the likelihood of an individual with poor health engaging in social events?

Key Messages

- People with a chronic health condition in the labour force were 2.3 times more likely to be participating in social events.
- People with a chronic health condition in the labour force were 2.1 times more likely to be participating in cultural events.

Strengths and Limitations

- A limitation of this study is that it was conducted using cross-sectional data.

ABSTRACT

Objectives

Social interaction may be particularly important for people with chronic health conditions, due to the numerous benefits to an individual's health. This paper aims to determine if labour force participation is a factor that influences individuals with chronic health conditions partaking in social or cultural events.

Design and setting

The study undertakes cross-sectional analysis of *2009 Survey of Disability, Ageing and Carers*, a nationally representative survey of the Australian population.

Participants

33 376 records of persons aged 25 to 64 years.

Outcome measures

Participation in social and community activities.

Results

It was found that after controlling for age, sex, level of highest education, income unit type, and severity of disability, people with a chronic health condition that were in the labour force were more than twice as likely to be participating in social or community events (OR: 2.54, 95% CI: 1.95 – 3.29, p<.0001), and in cultural events (OR 2.57, 95% CI: 2.21 – 3.00, p<.0001) as their counterparts who were out of the labour force. The results were then repeated, with the addition of income as a confounding variable. People with a chronic health condition that were in the labour force were still a little more than twice as likely to be participating in social or community events (OR: 2.25, 95% CI: 1.69 – 3.00, p<.0001), and to be participating in cultural events (OR 2.08, 95% CI: 1.76 – 2.45, p<.0001) as their counterparts who were out of the labour force.

Conclusion

Participating in the labour force may be an important driver of social participation amongst those with chronic health conditions, independent of income. People with chronic health conditions who are not in the labour force and do not participate in social or cultural activities may have compounding disadvantage.

Introduction

Participating in social events and having access to social networks are known to produce numerous health benefits. Some studies have documented the improved survival rates associated with social activities [1-4] – with one study finding that social activities had similar survival advantages as exercise activities [2]. Similarly, social participation has been associated with lower chronic disease rates [5], positive outcomes relating to cardiovascular, endocrine and immune systems [6], improved quality of life and better overall mental wellbeing [7-8]. The potential health benefits of social participation also extend to those who already have chronic health conditions [9-11].

The explanation for these health benefits are complex and diverse, and range from social support being linked with a lower likelihood of chronic disease risk factors such as smoking and lack of exercise, to the tangible benefits such as help in times of need, to biochemical explanations such as reductions in level of fibrinogen and catecholamine, and social contact reducing stress by enhancing cellular and humoral immune responses [5-6]. Regardless of explanation, this past research has highlighted the importance of social networks and socialising for better health.

It is known that labour force participation has been linked with higher rates of social inclusion [12-14], therefore participating in the labour force may be an important factor in facilitating participation in social activities. Given the high chance people with chronic health conditions have of exiting the labour force – with one Australian study finding that over half of 45 to 64 year old Australians with a chronic health condition were not in the labour force [15] – it may be likely that people who have had to retire early due to their ill health may also be excluded from social activities and may be missing out on the associated health benefits.

This paper will explore the relationship between participation in the labour force and participation in social, community or cultural activities amongst Australians aged 25 – 64 years with a chronic health condition. We will examine whether people with a chronic health condition who are in the labour

force are more likely to participate in social and community activities than those who are out of the labour force.

Methods

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It is possible that those in the labour force may have higher rates of social participation as their employment income may give them the financial capacity to do so. It has been found that in a number of European countries those who experience long term unemployment have less chance of meeting with friends and participating in social clubs or organizations, and the authors theorised that this could be due to financial difficulties in maintaining relationships [14]. In Australia, Saunders reported that 16% of households could not afford to participate in social activities [17], and Berry has

also speculated on the restrictions lack of financial resources play on social and community participation [18]. As such, labour force participation could facilitate social and community participation as it merely provides the financial capability. Due to this possibility, the results will be controlled for the influence of income unit income.

Statistical Analysis

The study was limited to people aged 25 to 64 years and identified people who had a chronic health condition and indicated that their condition was disabling. On the 2009 SDAC all people with a disability had a long term health condition, but not all people with a long term health condition had a disability. Within the 2009 SDAC a disability is defined as "a limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months and restricts everyday activities" [16]. Previous studies have shown that there is considerable variation in the functional outcomes of people with different health conditions [15 19]. As the authors were concerned with identifying people with poor health, whose capabilities were limited by their health condition, those with a long term health condition (chronic health condition) that was disabling were selected to be the focus of this paper.

Initial descriptive analysis was undertaken to compare the rates of labour force participation and social interaction between those with and without a disabling chronic health condition. The study compared individuals who were in and out of the labour force, with 'in the labour force' being defined as being employed full time, employed part time, or looking for full time or part time work.

Logistic regression models were then constructed to look at the odds ratio of participating in social or community activities and cultural or leisure activities for those with a disabling chronic health condition and were in the labour force compared to those out of the labour force. The models were adjusted for age, sex, level of highest education, severity of disability and family type (single, couple, single parent with dependent children, or couple with dependent children). Disability severity classified people as having either a disability and not limited in core activities or restricted in

schooling or employment; a disability and not limited in core activities but restricted in schooling or employment; a disability and mildly limited in core activities; a disability and moderately limited in core activities; a disability and severely limited in core activities; or a disability and profoundly limited in core activities. This severity of disability variable has been shown to correlate with self assessed health status[20], but was considered to provide more detailed information on health and functional limitation.

A sensitivity analysis was conducted to control for the impact of income unit income. The logistic regression models were repeated with the inclusion of income unit income decile. The analyses were undertaken using SAS V9.1 (SAS Institute Inc., Cary, NC, USA). All statistical tests were two sided with the significance level set at 5%.

Results

In the 2009 SDAC there were 33 376 records of people aged 25 to 64 years who were members of an income unit. Once weighted, this represented 11 350 900 individuals in the Australian population in 2009. There were 5 704 records of persons aged 25 to 64 years who had a chronic health condition and stated that their condition was disabling (representing 1 896 400 individuals in the Australian population in 2009).

Of the people who had a chronic health condition that was disabling, 55 per cent were in the labour force (1 035 000 individuals), and 45 per cent were out of the labour force (861 400 individuals). Of those who did not have a disabling chronic health condition, 86% were in the labour force (8 141 000 individuals), and 14% were out of the labour force (1 313 500 individuals).

Table 1 shows the proportion of people that were participating in various social activities amongst those with a chronic health condition that was disabling and those without a disabling chronic health condition who were in and out of the labour force. Almost 100% of people who did *not* have a disabling chronic health condition participated in social or community activities, regardless of labour

force participation status. Similarly, almost all (96%) of the people with a chronic health condition who were in the labour force participated in a social or community activity, whereas only 88% of those with a chronic health condition that were not in the labour force did so.

Almost all people *without* a disabling chronic health condition participated in cultural or leisure activities regardless of whether they were in or out of the labour force (99% and 96% respectively). A higher proportion of people with a disabling chronic health condition that were in the labour force participated in cultural or leisure activities (85%) than people with a disabling chronic health condition that were not in the labour force (60%). Over one-third of those out of the labour force with a disabling chronic health condition had *not* participated in a cultural or leisure activity in the past twelve months in 2009.

The analysis was then limited to those with a disabling chronic health condition. After adjusting for age, sex, level of highest education attainment, severity of disability and income unit type there were found to be significant differences in the experience of social contact between those in the labour force with a chronic health condition and those out of the labour force with a chronic health condition (Table 2). Those in the labour force with a chronic health condition were more than twice as likely to be participating in social or community activities away from home compared to those not in the labour force with a chronic health condition (OR: 2.54, 95% CI: 1.95 – 3.29, p<.0001). Those in the labour force with a chronic health condition were 2.57 times more likely to have participated in cultural or leisure activities away from home than people with a chronic health condition that were out of the labour force (OR 2.57, 95% CI: 2.21 – 3.00, p<.0001).

Sensitivity analysis

After adjusting for income unit income as well as age, sex, level of highest education attainment, severity of disability and income unit type there was still a significant difference in the experience of social contact between those in the labour force with a chronic health condition and those out of the labour force with a chronic health condition (Table 3). After also adjusting for income, those in the

labour force with a chronic health condition were still more than twice as likely to have participated in social or community activities away from the home compared to those not in the labour force with a chronic health condition (OR: 2.25, 95% CI: 1.69 – 3.00, p<.0001). Those in the labour force with a chronic health condition were now 2.08 times more likely to have participated in social or community activities away from the home, than people with a chronic health condition that were out of the labour force (OR 2.08, 95% CI: 1.76 – 2.45, p<.0001).

Discussion

A higher proportion of people who did *not* have a disabling chronic health condition participated in social and cultural activities, regardless of labour force participation status, than people who did have a disabling chronic health condition. Amongst people with a disabling chronic health condition, people who were in the labour force were significantly more likely to participate in social and cultural activities. In this study, the authors controlled for the effects of age, sex, level of education attainment, severity and type of disability, income unit type and level of income, indicating that labour force participation may have unique benefits that foster participation in social activities.

The economic benefit of labour force participation for people with a health condition has been well established. It is known that those who retire early due to ill health have a lower income, lower amounts of accumulated wealth and will reach the age of 65 years with lower amounts of savings to support their retirement than those who remain in the labour force [21-27]. However, this study has shown that there are additional social benefits of remaining in the workforce that are independent from the economic benefits.

Causality

A limitation of this study is that it was conducted using cross-sectional data. As a result of this, only the relationship between labour force participation and participation in social and cultural activities at one point in time could be assessed. While participating in the labour force may facilitate social

and cultural participation amongst those with a chronic health condition, it is also possible that participating in social and cultural activities may facilitate labour force participation amongst those with a disabling chronic health condition.

It has been theorised that being part of a social network gives members access to 'social leverage' – a form of social capital that is generated by the network of people. Social leverage helps members of a network to access information to improve their social position, such as details of employment opportunities or job referrals. However, access to this information is usually limited to members of the social network [28]. Developing a chronic health condition may result in individuals developing limitations that may restrict the type of tasks they can perform. This may require people to change jobs or industries to find employment that provides suitable working conditions. As such, being part of a social network may increase chances of labour force participation amongst those with poor health. However, despite theories that link social networks and finding employment, a longitudinal study of European Union countries reported no link between social networks and finding employment [29]. Thus, it is likely that labour force participation does facilitate social participation, rather than the other way around.

Health Implications

Regardless of causality, those with a disabling chronic health condition who are out of the labour force have lower rates of social and community participation, and so may be forgoing the health benefits social participation provides. Social capital – which includes, but is not limited to, social participation – is linked to health status [30-31]. Berry [32] has looked at the relationship between social capital and health in Australia and found that informal social connections and civic engagement were linked to better health outcomes. Informal social connections and civic engagement broadly align with the variables of social participation utilised in this study. Social exclusion has also been linked with poor health outcomes [33], and some studies have documented the improvement in health

that can be gained by those with chronic health conditions participating in social activities and through engaging in social networks [9-11].

Those with a disabling chronic health condition who are not in the labour force and do not participate in social or cultural activities may have compounding disadvantage. In addition to the health benefits of social participation, participating in the labour force is also known to have its own health benefits, particularly for mental wellbeing. The causal relationships between unemployment and health were highlighted by a longitudinal British study in the 1980s [34-35] with Australian studies later also demonstrating the adverse impacts of unemployment on the mental health of young people [36-38]. Poorer mental health has been a feature of the research on unemployment and health, with a study from the United States of America of men aged 35-60 years reporting higher rates of depression and anxiety after becoming unemployed [39] and a reported higher rate of psychological distress amongst German men over the age of 45 years which was ameliorated by re-employment [40]. In light of this association, people who are not in the labour force and not participating in social events may experience a further deterioration of the health and may be more susceptible to developing co-morbid mental health conditions.

The health benefits of social participation have been well documented [1-8]. However, people with poor health may have limited exposure to social activities and social interaction due to low rates of labour force participation. This study has shown that people with a disabling chronic health condition who are not in the labour force are less likely to be participating in social and cultural activities. The study controlled for a number of variables that may have confounded this relationship – such as income, income unit type (being in a relationship or single, with or without children), and severity and type of disability. This indicates that participating in the labour force in-itself may be an important driver of social participation and an important opportunity for social contact amongst those with chronic health conditions. Employment may provide these people with the opportunity to create social contacts and networks, and also the opportunity to engage with them.

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Author Contributions

EC conceived the study, carried out the data analysis and drafted the manuscript. DS provided expert advice into the design of the study and the interpretation of the results, and contributed to the final manuscript.

Ethics Approval

The use of this data was approved by the Australian Bureau of Statistics.

Data sharing

The data used in this study, which came from the *2009 Survey of Disability, Ageing and Carers*, is publically available through application to the Australian Bureau of Statistics.

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Table 1: Proportion of individuals, in and out of the labour force, participating in activities away from home, 2009

	Participating in social or community activities away from home		Participating in cultural or leisure activities away from home		Total
	N	*%*	*N*	*%*	
Did not have a disabling chronic health condition					
In the labour force	8 126 300	100%	8 074 300	99%	8 141 000
Not in the labour force	1 302 100	99%	1 266 600	96%	1 313 500
Had a disabling chronic health condition					
In the labour force	994 800	96%	880 400	85%	1 035 000
Not in the labour force	759 500	88%	525 200	60%	861 500

Table 2: Likelihood of participating in social or community activities away from home or participating in cultural or leisure activities away from home, adjusted for age, sex, education, severity of disability and income unit type, Australians aged 25 to 64 years, 2009

	Participating in social or community activities away from home			**Participating in cultural or leisure activities away from home**		
	OR	95% CI	p-value	OR	95% CI	p-value
In the labour force	REFERENCE			REFERENCE		
Not in the labour force	2.54	1.95 – 3.29	<.0001	2.57	2.21 – 3.00	<.0001

Table 3: SENSITIVITY ANALYSIS: Likelihood of participating in social or community activities away from home or participating in cultural or leisure activities away from home, adjusted for age, sex, education, severity of disability, income unit type and income unit income, Australians aged 25 to 64 years, 2009

	Participating in social or community activities away from home			**Participating in cultural or leisure activities away from home**		
	OR	95% CI	p-value	OR	95% CI	p-value
In the labour force	REFERENCE			REFERENCE		
Not in the labour force	2.25	1.69 – 3.00	<.0001	2.08	1.76 – 2.45	<.0001

The relationship between employment and social participation amongst Australians with a chronic health condition: a cross-sectional analysis

ARTICLE SUMMARY

Article Focus

- Does labour force participation influence the likelihood of an individual with poor health engaging in social events?

Key Messages

- People with a chronic health condition in the labour force were 2.3 times more likely to be participating in social events.
- People with a chronic health condition in the labour force were 2.1 times more likely to be participating in cultural events.

Strengths and Limitations

- A limitation of this study is that it was conducted using cross-sectional data.

ABSTRACT

Objectives

Social interaction may be particularly important for people with chronic health conditions, due to the numerous benefits to an individual's health. This paper aims to determine if labour force participation is a factor that influences individuals with chronic health conditions partaking in social or cultural events.

Design and setting

The study undertakes cross-sectional analysis of *2009 Survey of Disability, Ageing and Carers*, a nationally representative survey of the Australian population.

Participants

33 376 records of persons aged 25 to 64 years.

Outcome measures

Participation in social and community activities.

Results

It was found that after controlling for age, sex, level of highest education, income unit type, and severity of disability, people with a chronic health condition that were in the labour force were more than twice as likely to be participating in social or community events (OR: 2.54, 95% CI: 1.95 – 3.29, p<.0001), and in cultural events (OR 2.57, 95% CI: 2.21 – 3.00, p<.0001) as their counterparts who were out of the labour force. The results were then repeated, with the addition of income as a confounding variable. People with a chronic health condition that were in the labour force were still a little more than twice as likely to be participating in social or community events (OR: 2.25, 95% CI: 1.69 – 3.00, p<.0001), and to be participating in cultural events (OR 2.08, 95% CI: 1.76 – 2.45, p<.0001) as their counterparts who were out of the labour force.

Conclusion

Participating in the labour force may be an important driver of social participation amongst those with chronic health conditions, independent of income. People with chronic health conditions who are not in the labour force and do not participate in social or cultural activities may have compounding disadvantage.

Introduction

Participating in social events and having access to social networks are known to produce numerous health benefits. Some studies have documented the improved survival rates associated with social activities [1-4] – with one study finding that social activities had similar survival advantages as exercise activities [2]. Similarly, social participation has been associated with lower chronic disease rates [5], positive outcomes relating to cardiovascular, endocrine and immune systems [6], improved quality of life and better overall mental wellbeing [7-8]. The potential health benefits of social participation also extend to those who already have chronic health conditions [9-11].

The explanation for these health benefits are complex and diverse, and range from social support being linked with a lower likelihood of chronic disease risk factors such as smoking and lack of exercise, to the tangible benefits such as help in times of need, to biochemical explanations such as reductions in level of fibrinogen and catecholamine, and social contact reducing stress by enhancing cellular and humoral immune responses [5-6]. Regardless of explanation, this past research has highlighted the importance of social networks and socialising for better health.

It is known that labour force participation has been linked with higher rates of social inclusion [12-14], therefore participating in the labour force may be an important factor in facilitating participation in social activities. Given the high chance people with chronic health conditions have of exiting the labour force – with one Australian study finding that over half of 45 to 64 year old Australians with a chronic health condition were not in the labour force [15] – it may be likely that people who have had to retire early due to their ill health may also be excluded from social activities and may be missing out on the associated health benefits.

This paper will explore the relationship between participation in the labour force and participation in social, community or cultural activities amongst Australians aged 25 – 64 years with a chronic health condition. We will examine whether people with a chronic health condition who are in the labour

force are more likely to participate in social and community activities than those who are out of the labour force.

Methods

This study was conducted using the *2009 Survey of Disability, Ageing and Carers* (SDAC), a nationally representative survey of health and disability conducted by the Australian Bureau of Statistics[16]. The 2009 SDAC had a response rate of 89.9%, with 28,474 households participating, and 64,123 fully responding persons. The data is weighted such that the weight assigned to each survey record provides an estimate of the number of similar individuals in the Australian population[16], which allowed nationally representative results to be produced.

Measure of social participation

Respondents in the 2009 SDAC were asked about their participation in social or community activities away from home in the three months prior to the interview and their culture or leisure activities in the 12 months prior to the interview. Social or community participation away from home consisted of either visiting relatives or friends or a restaurant or club, or participating in church, voluntary, performing arts groups, art or craft group or other special interest group activities, or other activities not specified. Cultural or leisure activities consisted of either visiting a museum, art gallery, library, animal or marine park, or botanic gardens, or attending theatre, a concert, cinemas, or sports event as a spectator, or taking part in a sport or recreation activity.

Controlling for income

It is possible that those in the labour force may have higher rates of social participation as their employment income may give them the financial capacity to do so. It has been found that in a number of European countries those who experience long term unemployment have less chance of meeting with friends and participating in social clubs or organizations, and the authors theorised that this could be due to financial difficulties in maintaining relationships [14]. In Australia, Saunders reported that 16% of households could not afford to participate in social activities [17], and Berry has

also speculated on the restrictions lack of financial resources play on social and community participation [18]. As such, labour force participation could facilitate social and community participation as it merely provides the financial capability. Due to this possibility, the results will be controlled for the influence of income unit income.

Statistical Analysis

The study was limited to people aged 25 to 64 years and identified people who had a chronic health condition and indicated that their condition was disabling. On the 2009 SDAC all people with a disability had a long term health condition, but not all people with a long term health condition had a disability. Within the 2009 SDAC a disability is defined as "a limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months and restricts everyday activities" [16]. Previous studies have shown that there is considerable variation in the functional outcomes of people with different health conditions [15 19]. As the authors were concerned with identifying people with poor health, whose capabilities were limited by their health condition, those with a long term health condition (chronic health condition) that was disabling were selected to be the focus of this paper.

Initial descriptive analysis was undertaken to compare the rates of labour force participation and social interaction between those with and without a disabling chronic health condition. The study compared individuals who were in and out of the labour force, with 'in the labour force' being defined as being employed full time, employed part time, or looking for full time or part time work.

Logistic regression models were then constructed to look at the odds ratio of participating in social or community activities and cultural or leisure activities for those with a disabling chronic health condition and were in the labour force compared to those out of the labour force. The models were adjusted for age, sex, level of highest education, severity of disability and income unit type (single, couple, single parent with dependent children, or couple with dependent children). Disability severity classified people as having either a disability and not limited in core activities or restricted in

schooling or employment; a disability and not limited in core activities but restricted in schooling or employment; a disability and mildly limited in core activities; a disability and moderately limited in core activities; a disability and severely limited in core activities; or a disability and profoundly limited in core activities. This severity of disability variable has been shown to correlate with self assessed health status[20], but was considered to provide more detailed information on health and functional limitation.

A sensitivity analysis was conducted to control for the impact of income unit income. The logistic regression models were repeated with the inclusion of income unit income decile. The analyses were undertaken using SAS V9.1 (SAS Institute Inc., Cary, NC, USA). All statistical tests were two sided with the significance level set at 5%.

Results

In the 2009 SDAC there were 33 376 records of people aged 25 to 64 years who were members of an income unit. Once weighted, this represented 11 350 900 individuals in the Australian population in 2009. There were 5 704 records of persons aged 25 to 64 years who had a chronic health condition and stated that their condition was disabling (representing 1 896 400 individuals in the Australian population in 2009).

Of the people who had a chronic health condition that was disabling, 55 per cent were in the labour force (1 035 000 individuals), and 45 per cent were out of the labour force (861 400 individuals). Of those who did not have a disabling chronic health condition, 86% were in the labour force (8 141 000 individuals), and 14% were out of the labour force (1 313 500 individuals).

Table 1 shows the proportion of people that were participating in various social activities amongst those with a chronic health condition that was disabling and those without a disabling chronic health condition who were in and out of the labour force. Almost 100% of people who did *not* have a disabling chronic health condition participated in social or community activities, regardless of labour

force participation status. Similarly, almost all (96%) of the people with a chronic health condition who were in the labour force participated in a social or community activity, whereas only 88% of those with a chronic health condition that were not in the labour force did so.

Almost all people *without* a disabling chronic health condition participated in cultural or leisure activities regardless of whether they were in or out of the labour force (99% and 96% respectively). A higher proportion of people with a disabling chronic health condition that were in the labour force participated in cultural or leisure activities (85%) than people with a disabling chronic health condition that were not in the labour force (60%). Over one-third of those out of the labour force with a disabling chronic health condition had *not* participated in a cultural or leisure activity in the past twelve months in 2009.

The analysis was then limited to those with a disabling chronic health condition. After adjusting for age, sex, level of highest education attainment, severity of disability and income unit type there were found to be significant differences in the experience of social contact between those in the labour force with a chronic health condition and those out of the labour force with a chronic health condition (Table 2). Those in the labour force with a chronic health condition were more than twice as likely to be participating in social or community activities away from home compared to those not in the labour force with a chronic health condition (OR: 2.54, 95% CI: 1.95 – 3.29). Those in the labour force with a chronic health condition were 2.57 times more likely to have participated in cultural or leisure activities away from home than people with a chronic health condition that were out of the labour force (OR 2.57, 95% CI: 2.21 – 3.00).

Sensitivity analysis

After adjusting for income unit income as well as age, sex, level of highest education attainment, severity of disability and income unit type there was still a significant difference in the experience of social contact between those in the labour force with a chronic health condition and those out of the labour force with a chronic health condition (Table 3). After also adjusting for income, those in the

labour force with a chronic health condition were still more than twice as likely to have participated in social or community activities away from the home compared to those not in the labour force with a chronic health condition (OR: 2.25, 95% CI: 1.69 – 3.00). Those in the labour force with a chronic health condition were now 2.08 times more likely to have participated in social or community activities away from the home, than people with a chronic health condition that were out of the labour force (OR 2.08, 95% CI: 1.76 – 2.45).

Discussion

A higher proportion of people who did *not* have a disabling chronic health condition participated in social and cultural activities, regardless of labour force participation status, than people who did have a disabling chronic health condition. Amongst people with a disabling chronic health condition, people who were in the labour force were significantly more likely to participate in social and cultural activities. In this study, the authors controlled for the effects of age, sex, level of education attainment, severity and type of disability, income unit type and level of income, indicating that labour force participation may have unique benefits that foster participation in social activities.

The economic benefit of labour force participation for people with a health condition has been well established. It is known that those who retire early due to ill health have a lower income, lower amounts of accumulated wealth and will reach the age of 65 years with lower amounts of savings to support their retirement than those who remain in the labour force [21-27]. However, this study has shown that there are additional social benefits of remaining in the workforce that are independent from the economic benefits.

Causality

A limitation of this study is that it was conducted using cross-sectional data. As a result of this, only the relationship between labour force participation and participation in social and cultural activities at one point in time could be assessed. While participating in the labour force may facilitate social

and cultural participation amongst those with a chronic health condition, it is also possible that participating in social and cultural activities may facilitate labour force participation amongst those with a disabling chronic health condition.

It has been theorised that being part of a social network gives members access to 'social leverage' – a form of social capital that is generated by the network of people. Social leverage helps members of a network to access information to improve their social position, such as details of employment opportunities or job referrals. However, access to this information is usually limited to members of the social network [28]. Developing a chronic health condition may result in individuals developing limitations that may restrict the type of tasks they can perform. This may require people to change jobs or industries to find employment that provides suitable working conditions. As such, being part of a social network may increase chances of labour force participation amongst those with poor health. However, despite theories that link social networks and finding employment, a longitudinal study of European Union countries reported no link between social networks and finding employment [29]. Thus, it is likely that labour force participation does facilitate social participation, rather than the other way around.

Health Implications

Regardless of causality, those with a disabling chronic health condition who are out of the labour force have lower rates of social and community participation, and so may be forgoing the health benefits social participation provides. Social capital – which includes, but is not limited to, social participation – is linked to health status [30-31]. Berry [32] has looked at the relationship between social capital and health in Australia and found that informal social connections and civic engagement were linked to better health outcomes. Informal social connections and civic engagement broadly align with the variables of social participation utilised in this study. Social exclusion has also been linked with poor health outcomes [33], and some studies have documented the improvement in health

that can be gained by those with chronic health conditions participating in social activities and through engaging in social networks [9-11].

Those with a disabling chronic health condition who are not in the labour force and do not participate in social or cultural activities may have compounding disadvantage. In addition to the health benefits of social participation, participating in the labour force is also known to have its own health benefits, particularly for mental wellbeing. The causal relationships between unemployment and health were highlighted by a longitudinal British study in the 1980s [34-35] with Australian studies later also demonstrating the adverse impacts of unemployment on the mental health of young people [36-38]. Poorer mental health has been a feature of the research on unemployment and health, with a study from the United States of America of men aged 35-60 years reporting higher rates of depression and anxiety after becoming unemployed [39] and a reported higher rate of psychological distress amongst German men over the age of 45 years which was ameliorated by re-employment [40]. In light of this association, people who are not in the labour force and not participating in social events may experience a further deterioration of the health and may be more susceptible to developing co-morbid mental health conditions.

The health benefits of social participation have been well documented [1-8]. However, people with poor health may have limited exposure to social activities and social interaction due to low rates of labour force participation. This study has shown that people with a disabling chronic health condition who are not in the labour force are less likely to be participating in social and cultural activities. The study controlled for a number of variables that may have confounded this relationship – such as income, income unit type (being in a relationship or single, with or without children), and severity and type of disability. This indicates that participating in the labour force in-itself may be an important driver of social participation and an important opportunity for social contact amongst those with chronic health conditions. Employment may provide these people with the opportunity to create social contacts and networks, and also the opportunity to engage with them.

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Author Contributions

EC conceived the study, carried out the data analysis and drafted the manuscript. DS provided expert advice into the design of the study and the interpretation of the results, and contributed to the final manuscript.

Ethics Approval

The use of this data was approved by the Australian Bureau of Statistics.

Data sharing

The data used in this study, which came from the *2009 Survey of Disability, Ageing and Carers*, is publically available through application to the Australian Bureau of Statistics.

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Table 1: Proportion of individuals, in and out of the labour force, participating in activities away from home, 2009

	Participating in social or community activities away from home		Participating in cultural or leisure activities away from home		Total
	N	*%*	*N*	*%*	
Did not have a disabling chronic health condition					
In the labour force	8 126 300	100%	8 074 300	99%	8 141 000
Not in the labour force	1 302 100	99%	1 266 600	96%	1 313 500
Had a disabling chronic health condition					
In the labour force	994 800	96%	880 400	85%	1 035 000
Not in the labour force	759 500	88%	525 200	60%	861 500

Table 2: Likelihood of participating in social or community activities away from home or participating in cultural or leisure activities away from home, adjusted for age, sex, education, severity of disability and income unit type, Australians aged 25 to 64 years, 2009

	Participating in social or community activities away from home			Participating in cultural or leisure activities away from home		
	OR	95% CI	p-value	OR	95% CI	p-value
In the labour force	REFERENCE			REFERENCE		
Not in the labour force	2.54	1.95 – 3.29	<.0001	2.57	2.21 – 3.00	<.0001

Table 3: SENSITIVITY ANALYSIS: Likelihood of participating in social or community activities away from home or participating in cultural or leisure activities away from home, adjusted for age, sex, education, severity of disability, income unit type and income unit income, Australians aged 25 to 64 years, 2009

	Participating in social or community activities away from home			**Participating in cultural or leisure activities away from home**		
	OR	95% CI	p-value	OR	95% CI	p-value
In the labour force	REFERENCE			REFERENCE		
Not in the labour force	2.25	1.69 – 3.00	<.0001	2.08	1.76 – 2.45	<.0001

The relationship between employment and social participation amongst Australians with a disabling chronic health condition: a cross-sectional analysis

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THE RELATIONSHIP BETWEEN EMPLOYMENT AND SOCIAL PARTICIPATION AMONGST AUSTRALIANS WITH A DISABLING CHRONIC HEALTH CONDITION: A CROSS-SECTIONAL ANALYSIS

ARTICLE SUMMARY

ARTICLE FOCUS

- Does labour force participation influence the likelihood of an individual with poor health engaging in social events?

KEY MESSAGES

- People with a chronic health condition in the labour force were 2.3 times more likely to be participating in social events.
- People with a chronic health condition in the labour force were 2.1 times more likely to be participating in cultural events.

STRENGTHS AND LIMITATIONS

- A limitation of this study is that it was conducted using cross-sectional data.

ABSTRACT

OBJECTIVES

Social interaction may be particularly important for people with chronic health conditions, due to the numerous benefits to an individual's health. This paper aims to determine if labour force participation is a factor that influences individuals with chronic health conditions partaking in social or cultural events.

DESIGN AND SETTING

The study undertakes cross-sectional analysis of *2009 Survey of Disability, Ageing and Carers*, a nationally representative survey of the Australian population.

PARTICIPANTS

33 376 records of persons aged 25 to 64 years.

OUTCOME MEASURES

Participation in social and community activities.

RESULTS

It was found that after controlling for age, sex, level of highest education, income unit type, and severity of disability, people with a chronic health condition that were in the labour force were more than twice as likely to be participating in social or community events (OR: 2.54, 95% CI: 1.95 – 3.29, p<.0001), and in cultural events (OR 2.57, 95% CI: 2.21 – 3.00, p<.0001) as their counterparts who were out of the labour force. The results were then repeated, with the addition of income as a confounding variable. People with a chronic health condition that were in the labour force were still a little more than twice as likely to be participating in social or community events (OR: 2.25, 95% CI:

1.69 – 3.00, p<.0001), and to be participating in cultural events (OR 2.08, 95% CI: 1.76 – 2.45, p<.0001) as their counterparts who were out of the labour force.

CONCLUSION

Participating in the labour force may be an important driver of social participation amongst those with chronic health conditions, independent of income. People with chronic health conditions who are not in the labour force and do not participate in social or cultural activities may have compounding disadvantage.

INTRODUCTION

Participating in social events and having access to social networks are known to produce numerous health benefits. Some studies have documented the improved survival rates associated with social activities [1-4] – with one study finding that social activities had similar survival advantages as exercise activities [2]. Similarly, social participation has been associated with lower chronic disease rates [5], positive outcomes relating to cardiovascular, endocrine and immune systems [6], improved quality of life and better overall mental wellbeing [7-8]. The potential health benefits of social participation also extend to those who already have chronic health conditions [9-11].

The explanation for these health benefits are complex and diverse, and range from social support being linked with a lower likelihood of chronic disease risk factors such as smoking and lack of exercise, to the tangible benefits such as help in times of need, to biochemical explanations such as reductions in level of fibrinogen and catecholamine, and social contact reducing stress by enhancing cellular and humoral immune responses [5-6]. Regardless of explanation, this past research has highlighted the importance of social networks and socialising for better health.

It is known that labour force participation has been linked with higher rates of social inclusion [12-14], therefore participating in the labour force may be an important factor in facilitating participation in social activities. Given the high chance people with chronic health conditions have of exiting the labour force – with one Australian study finding that over half of 45 to 64 year old Australians with a chronic health condition were not in the labour force [15] – it may be likely that people who have had to retire early due to their ill health may also be excluded from social activities and may be missing out on the associated health benefits.

This paper will explore the relationship between participation in the labour force and participation in social, community or cultural activities amongst Australians aged 25 – 64 years with a chronic health condition. We will examine whether people with a chronic health condition who are in the labour

force are more likely to participate in social and community activities than those who are out of the labour force.

It is possible that those in the labour force may have higher rates of social participation as their employment income may give them the financial capacity to do so. It has been found that in a number of European countries those who experience long term unemployment have less chance of meeting with friends and participating in social clubs or organizations, and the authors theorised that this could be due to financial difficulties in maintaining relationships [14]. In Australia, Saunders reported that 16% of households could not afford to participate in social activities [16], and Berry has also speculated on the restrictions lack of financial resources play on social and community participation [17]. As such, labour force participation could facilitate social and community participation as it merely provides the financial capability. Due to this possibility, the results will be controlled for the influence of income unit income.

METHODS

This study was conducted using the *2009 Survey of Disability, Ageing and Carers* (SDAC), a nationally representative survey of health and disability conducted by the Australian Bureau of Statistics[18]. The 2009 SDAC had a response rate of 89.9%, with 28,474 households participating, and 64,123 fully responding persons. The data is weighted such that the weight assigned to each survey record provides an estimate of the number of similar individuals in the Australian population[18], which allowed nationally representative results to be produced.

MEASURE OF SOCIAL PARTICIPATION

Respondents in the 2009 SDAC were asked about their participation in social or community activities away from home in the three months prior to the interview and their culture or leisure activities in the 12 months prior to the interview. Social or community participation away from home consisted of either visiting relatives or friends or a restaurant or club, or participating in church, voluntary,

performing arts groups, art or craft group or other special interest group activities, or other activities not specified. Cultural or leisure activities consisted of either visiting a museum, art gallery, library, animal or marine park, or botanic gardens, or attending theatre, a concert, cinemas, or sports event as a spectator, or taking part in a sport or recreation activity.

The study was limited to people aged 25 to 64 years and identified people who had a chronic health condition and indicated that their condition was disabling. On the 2009 SDAC all people with a disability had a long term health condition, but not all people with a long term health condition had a disability. Within the 2009 SDAC a disability is defined as "a limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months and restricts everyday activities" [18]. Previous studies have shown that there is considerable variation in the functional outcomes of people with different health conditions [15 19]. As the authors were concerned with identifying people with poor health and whose capabilities were limited by their health condition, those with a long term health condition (chronic health condition) that was disabling were selected to be the focus of this paper. In this paper, the comparator group – those who did not have a disabling chronic health condition – consists of those with no chronic health conditions and those with a chronic health condition who stated they did not have a disability.

Statistical Analysis

Initial descriptive analysis was undertaken to compare the rates of labour force participation and social interaction between those with and without a disabling chronic health condition. The study compared individuals who were in and out of the labour force, with 'in the labour force' being defined as being employed full time, employed part time, or looking for full time or part time work.

Logistic regression models were then constructed to look at the odds ratio of participating in social or community activities and cultural or leisure activities for those with a disabling chronic health condition and were in the labour force compared to those out of the labour force. The models were adjusted for age, sex, level of highest education, severity of disability and income unit type (single,

couple, single parent with dependent children, or couple with dependent children). Disability severity classified people as having either a disability and not limited in core activities or restricted in schooling or employment; a disability and not limited in core activities but restricted in schooling or employment; a disability and mildly limited in core activities; a disability and moderately limited in core activities; a disability and severely limited in core activities; or a disability and profoundly limited in core activities. This severity of disability variable has been shown to correlate with self assessed health status [20], but was considered to provide more detailed information on health and functional limitation.

A sensitivity analysis was conducted to control for the impact of income unit income. The logistic regression models were repeated with the inclusion of income unit income decile. The analyses were undertaken using SAS V9.1 (SAS Institute Inc., Cary, NC, USA). All statistical tests were two sided with the significance level set at 5%.

RESULTS

In the 2009 SDAC there were 33 376 records of people aged 25 to 64 years who were members of an income unit. Once weighted, this represented 11 350 900 individuals in the Australian population in 2009. There were 5 704 records of persons aged 25 to 64 years who had a chronic health condition and stated that their condition was disabling (representing 1 896 400 individuals in the Australian population in 2009).

Of the people who had a chronic health condition that was disabling, 55 per cent were in the labour force (1 035 000 individuals), and 45 per cent were out of the labour force (861 400 individuals). Of those who did not have a disabling chronic health condition, 86% were in the labour force (8 141 000 individuals), and 14% were out of the labour force (1 313 500 individuals).

Table 1 shows the proportion of people that were participating in various social activities amongst those with a chronic health condition that was disabling and those without a disabling chronic health

condition who were in and out of the labour force. Almost 100% of people who did *not* have a disabling chronic health condition participated in social or community activities, regardless of labour force participation status. Similarly, almost all (96%) of the people with a chronic health condition who were in the labour force participated in a social or community activity, whereas only 88% of those with a chronic health condition that were not in the labour force did so.

Almost all people *without* a disabling chronic health condition participated in cultural or leisure activities regardless of whether they were in or out of the labour force (99% and 96% respectively). A higher proportion of people with a disabling chronic health condition that were in the labour force participated in cultural or leisure activities (85%) than people with a disabling chronic health condition that were not in the labour force (60%). Over one-third of those out of the labour force with a disabling chronic health condition had *not* participated in a cultural or leisure activity in the past twelve months in 2009.

The analysis was then limited to those with a disabling chronic health condition. After adjusting for age, sex, level of highest education attainment, severity of disability and income unit type there were found to be significant differences in the experience of social contact between those in the labour force with a chronic health condition and those out of the labour force with a chronic health condition (Table 2). Those in the labour force with a chronic health condition were more than twice as likely to be participating in social or community activities away from home compared to those not in the labour force with a chronic health condition (OR: 2.54, 95% CI: 1.95 – 3.29). Those in the labour force with a chronic health condition were 2.57 times more likely to have participated in cultural or leisure activities away from home than people with a chronic health condition that were out of the labour force (OR 2.57, 95% CI: 2.21 – 3.00).

Sensitivity analysis

After adjusting for income unit income as well as age, sex, level of highest education attainment, severity of disability and income unit type there was still a significant difference in the experience of

social contact between those in the labour force with a chronic health condition and those out of the labour force with a chronic health condition (Table 3). After also adjusting for income, those in the labour force with a chronic health condition were still more than twice as likely to have participated in social or community activities away from the home compared to those not in the labour force with a chronic health condition (OR: 2.25, 95% CI: 1.69 – 3.00). Those in the labour force with a chronic health condition were now 2.08 times more likely to have participated in social or community activities away from the home, than people with a chronic health condition that were out of the labour force (OR 2.08, 95% CI: 1.76 – 2.45).

DISCUSSION

A higher proportion of people who did *not* have a disabling chronic health condition participated in social and cultural activities, regardless of labour force participation status, than people who did have a disabling chronic health condition. Amongst people with a disabling chronic health condition, people who were in the labour force were significantly more likely to participate in social and cultural activities. In this study, the authors controlled for the effects of age, sex, level of education attainment, severity and type of disability, income unit type and level of income, indicating that labour force participation may have unique benefits that foster participation in social activities.

The economic benefit of labour force participation for people with a health condition has been well established. It is known that those who retire early due to ill health have a lower income, lower amounts of accumulated wealth and will reach the age of 65 years with lower amounts of savings to support their retirement than those who remain in the labour force [20-25]. However, this study has shown that there are additional social benefits of remaining in the workforce that are independent from the economic benefits.

CAUSALITY

A limitation of this study is that it was conducted using cross-sectional data. As a result of this, only the relationship between labour force participation and participation in social and cultural activities at one point in time could be assessed. While participating in the labour force may facilitate social and cultural participation amongst those with a chronic health condition, it is also possible that participating in social and cultural activities may facilitate labour force participation amongst those with a disabling chronic health condition.

It has been theorised that being part of a social network gives members access to 'social leverage' – a form of social capital that is generated by the network of people. Social leverage helps members of a network to access information to improve their social position, such as details of employment opportunities or job referrals. However, access to this information is usually limited to members of the social network [26]. Developing a chronic health condition may result in individuals developing limitations that may restrict the type of tasks they can perform. This may require people to change jobs or industries to find employment that provides suitable working conditions. As such, being part of a social network may increase chances of labour force participation amongst those with poor health. However, despite theories that link social networks and finding employment, a longitudinal study of European Union countries reported no link between social networks and finding employment [27]. Thus, it is likely that labour force participation does facilitate social participation, rather than the other way around.

Health Implications

Regardless of causality, those with a disabling chronic health condition who are out of the labour force have lower rates of social and community participation, and so may be forgoing the health benefits social participation provides. Social capital – which includes, but is not limited to, social participation – is linked to health status [28-29]. Berry [30] has looked at the relationship between social capital and health in Australia and found that informal social connections and civic engagement were linked to better health outcomes. Informal social connections and civic engagement broadly

align with the variables of social participation utilised in this study. Social exclusion has also been linked with poor health outcomes [31], and some studies have documented the improvement in health that can be gained by those with chronic health conditions participating in social activities and through engaging in social networks [9-11].

This study has shown that people with a disabling chronic health condition who are not in the labour force are less likely to be participating in social and cultural activities. The study controlled for a number of variables that may have confounded this relationship – such as income, income unit type (being in a relationship or single, with or without children), and severity and type of disability. This indicates that participating in the labour force in itself may be an important driver of social participation and an important opportunity for social contact amongst those with chronic health conditions. Employment may provide people with chronic health conditions the opportunity to create social contacts and networks, and also the opportunity to engage with them.

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AUTHOR CONTRIBUTIONS

EC conceived the study, carried out the data analysis and drafted the manuscript. DS provided expert advice into the design of the study and the interpretation of the results, and contributed to the final manuscript.

ETHICS APPROVAL

The use of this data was approved by the Australian Bureau of Statistics.

DATA SHARING

The data used in this study, which came from the *2009 Survey of Disability, Ageing and Carers*, is publically available through application to the Australian Bureau of Statistics.

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Table 1: Proportion of individuals, in and out of the labour force, participating in activities away from home, 2009

	Participating in social or community activities away from home		Participating in cultural or leisure activities away from home		Total
	N	*%*	*N*	*%*	
Did not have a disabling chronic health condition					
In the labour force	8 126 300	100%	8 074 300	99%	8 141 000
Not in the labour force	1 302 100	99%	1 266 600	96%	1 313 500
Had a disabling chronic health condition					
In the labour force	994 800	96%	880 400	85%	1 035 000
Not in the labour force	759 500	88%	525 200	60%	861 500

Table 2: Likelihood of participating in social or community activities away from home or participating in cultural or leisure activities away from home, adjusted for age, sex, education, severity of disability and income unit type, Australians aged 25 to 64 years, 2009

	Participating in social or community activities away from home			Participating in cultural or leisure activities away from home		
	OR	95% CI	p-value	OR	95% CI	p-value
In the labour force	REFERENCE			REFERENCE		
Not in the labour force	2.54	1.95 – 3.29	<.0001	2.57	2.21 – 3.00	<.0001

Table 3: SENSITIVITY ANALYSIS: Likelihood of participating in social or community activities away from home or participating in cultural or leisure activities away from home, adjusted for age, sex, education, severity of disability, income unit type and income unit income, Australians aged 25 to 64 years, 2009

	Participating in social or community activities away from home			**Participating in cultural or leisure activities away from home**		
	OR	95% CI	p-value	OR	95% CI	p-value
In the labour force	REFERENCE			REFERENCE		
Not in the labour force	2.25	1.69 – 3.00	<.0001	2.08	1.76 – 2.45	<.0001

The relationship between employment and social participation amongst Australians with a disabling chronic health condition: a cross-sectional analysis

ARTICLE SUMMARY

Article Focus

- Does labour force participation influence the likelihood of an individual with poor health engaging in social events?

Key Messages

- People with a chronic health condition in the labour force were 2.3 times more likely to be participating in social events.
- People with a chronic health condition in the labour force were 2.1 times more likely to be participating in cultural events.

Strengths and Limitations

- A limitation of this study is that it was conducted using cross-sectional data.

ABSTRACT

Objectives

Social interaction may be particularly important for people with chronic health conditions, due to the numerous benefits to an individual's health. This paper aims to determine if labour force participation is a factor that influences individuals with chronic health conditions partaking in social or cultural events.

Design and setting

The study undertakes cross-sectional analysis of *2009 Survey of Disability, Ageing and Carers*, a nationally representative survey of the Australian population.

Participants

33 376 records of persons aged 25 to 64 years.

Outcome measures

Participation in social and community activities.

Results

It was found that after controlling for age, sex, level of highest education, income unit type, and severity of disability, people with a chronic health condition that were in the labour force were more than twice as likely to be participating in social or community events (OR: 2.54, 95% CI: 1.95 – 3.29, p<.0001), and in cultural events (OR 2.57, 95% CI: 2.21 – 3.00, p<.0001) as their counterparts who were out of the labour force. The results were then repeated, with the addition of income as a confounding variable. People with a chronic health condition that were in the labour force were still a little more than twice as likely to be participating in social or community events (OR: 2.25, 95% CI: 1.69 – 3.00, p<.0001), and to be participating in cultural events (OR 2.08, 95% CI: 1.76 – 2.45, p<.0001) as their counterparts who were out of the labour force.

Conclusion

Participating in the labour force may be an important driver of social participation amongst those with chronic health conditions, independent of income. People with chronic health conditions who are not in the labour force and do not participate in social or cultural activities may have compounding disadvantage.

Introduction

Participating in social events and having access to social networks are known to produce numerous health benefits. Some studies have documented the improved survival rates associated with social activities [1-4] – with one study finding that social activities had similar survival advantages as exercise activities [2]. Similarly, social participation has been associated with lower chronic disease rates [5], positive outcomes relating to cardiovascular, endocrine and immune systems [6], improved quality of life and better overall mental wellbeing [7-8]. The potential health benefits of social participation also extend to those who already have chronic health conditions [9-11].

The explanation for these health benefits are complex and diverse, and range from social support being linked with a lower likelihood of chronic disease risk factors such as smoking and lack of exercise, to the tangible benefits such as help in times of need, to biochemical explanations such as reductions in level of fibrinogen and catecholamine, and social contact reducing stress by enhancing cellular and humoral immune responses [5-6]. Regardless of explanation, this past research has highlighted the importance of social networks and socialising for better health.

It is known that labour force participation has been linked with higher rates of social inclusion [12-14], therefore participating in the labour force may be an important factor in facilitating participation in social activities. Given the high chance people with chronic health conditions have of exiting the labour force – with one Australian study finding that over half of 45 to 64 year old Australians with a chronic health condition were not in the labour force [15] – it may be likely that people who have had to retire early due to their ill health may also be excluded from social activities and may be missing out on the associated health benefits.

This paper will explore the relationship between participation in the labour force and participation in social, community or cultural activities amongst Australians aged 25 – 64 years with a chronic health condition. We will examine whether people with a chronic health condition who are in the labour

force are more likely to participate in social and community activities than those who are out of the labour force.

It is possible that those in the labour force may have higher rates of social participation as their employment income may give them the financial capacity to do so. It has been found that in a number of European countries those who experience long term unemployment have less chance of meeting with friends and participating in social clubs or organizations, and the authors theorised that this could be due to financial difficulties in maintaining relationships [14]. In Australia, Saunders reported that 16% of households could not afford to participate in social activities [16], and Berry has also speculated on the restrictions lack of financial resources play on social and community participation [17]. As such, labour force participation could facilitate social and community participation as it merely provides the financial capability. Due to this possibility, the results will be controlled for the influence of income unit income.

Methods

This study was conducted using the *2009 Survey of Disability, Ageing and Carers* (SDAC), a nationally representative survey of health and disability conducted by the Australian Bureau of Statistics[18]. The 2009 SDAC had a response rate of 89.9%, with 28,474 households participating, and 64,123 fully responding persons. The data is weighted such that the weight assigned to each survey record provides an estimate of the number of similar individuals in the Australian population[18], which allowed nationally representative results to be produced.

Measure of social participation

Respondents in the 2009 SDAC were asked about their participation in social or community activities away from home in the three months prior to the interview and their culture or leisure activities in the 12 months prior to the interview. Social or community participation away from home consisted of either visiting relatives or friends or a restaurant or club, or participating in church, voluntary, performing arts groups, art or craft group or other special interest group activities, or other activities

not specified. Cultural or leisure activities consisted of either visiting a museum, art gallery, library, animal or marine park, or botanic gardens, or attending theatre, a concert, cinemas, or sports event as a spectator, or taking part in a sport or recreation activity.

The study was limited to people aged 25 to 64 years and identified people who had a chronic health condition and indicated that their condition was disabling. On the 2009 SDAC all people with a disability had a long term health condition, but not all people with a long term health condition had a disability. Within the 2009 SDAC a disability is defined as "a limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months and restricts everyday activities" [18]. Previous studies have shown that there is considerable variation in the functional outcomes of people with different health conditions [15 19]. As the authors were concerned with identifying people with poor health and whose capabilities were limited by their health condition, those with a long term health condition (chronic health condition) that was disabling were selected to be the focus of this paper. In this paper, the comparator group – those who did not have a disabling chronic health condition – consists of those with no chronic health conditions and those with a chronic health condition who stated they did not have a disability.

Statistical Analysis

Initial descriptive analysis was undertaken to compare the rates of labour force participation and social interaction between those with and without a disabling chronic health condition. The study compared individuals who were in and out of the labour force, with 'in the labour force' being defined as being employed full time, employed part time, or looking for full time or part time work.

Logistic regression models were then constructed to look at the odds ratio of participating in social or community activities and cultural or leisure activities for those with a disabling chronic health condition and were in the labour force compared to those out of the labour force. The models were adjusted for age, sex, level of highest education, severity of disability and income unit type (single, couple, single parent with dependent children, or couple with dependent children). Disability

severity classified people as having either a disability and not limited in core activities or restricted in schooling or employment; a disability and not limited in core activities but restricted in schooling or employment; a disability and mildly limited in core activities; a disability and moderately limited in core activities; a disability and severely limited in core activities; or a disability and profoundly limited in core activities. This severity of disability variable has been shown to correlate with self assessed health status [20], but was considered to provide more detailed information on health and functional limitation.

A sensitivity analysis was conducted to control for the impact of income unit income. The logistic regression models were repeated with the inclusion of income unit income decile. The analyses were undertaken using SAS V9.1 (SAS Institute Inc., Cary, NC, USA). All statistical tests were two sided with the significance level set at 5%.

Results

In the 2009 SDAC there were 33 376 records of people aged 25 to 64 years who were members of an income unit. Once weighted, this represented 11 350 900 individuals in the Australian population in 2009. There were 5 704 records of persons aged 25 to 64 years who had a chronic health condition and stated that their condition was disabling (representing 1 896 400 individuals in the Australian population in 2009).

Of the people who had a chronic health condition that was disabling, 55 per cent were in the labour force (1 035 000 individuals), and 45 per cent were out of the labour force (861 400 individuals). Of those who did not have a disabling chronic health condition, 86% were in the labour force (8 141 000 individuals), and 14% were out of the labour force (1 313 500 individuals).

Table 1 shows the proportion of people that were participating in various social activities amongst those with a chronic health condition that was disabling and those without a disabling chronic health condition who were in and out of the labour force. Almost 100% of people who did *not* have a

disabling chronic health condition participated in social or community activities, regardless of labour force participation status. Similarly, almost all (96%) of the people with a chronic health condition who were in the labour force participated in a social or community activity, whereas only 88% of those with a chronic health condition that were not in the labour force did so.

Almost all people *without* a disabling chronic health condition participated in cultural or leisure activities regardless of whether they were in or out of the labour force (99% and 96% respectively). A higher proportion of people with a disabling chronic health condition that were in the labour force participated in cultural or leisure activities (85%) than people with a disabling chronic health condition that were not in the labour force (60%). Over one-third of those out of the labour force with a disabling chronic health condition had *not* participated in a cultural or leisure activity in the past twelve months in 2009.

The analysis was then limited to those with a disabling chronic health condition. After adjusting for age, sex, level of highest education attainment, severity of disability and income unit type there were found to be significant differences in the experience of social contact between those in the labour force with a chronic health condition and those out of the labour force with a chronic health condition (Table 2). Those in the labour force with a chronic health condition were more than twice as likely to be participating in social or community activities away from home compared to those not in the labour force with a chronic health condition (OR: 2.54, 95% CI: 1.95 – 3.29). Those in the labour force with a chronic health condition were 2.57 times more likely to have participated in cultural or leisure activities away from home than people with a chronic health condition that were out of the labour force (OR 2.57, 95% CI: 2.21 – 3.00).

Sensitivity analysis

After adjusting for income unit income as well as age, sex, level of highest education attainment, severity of disability and income unit type there was still a significant difference in the experience of social contact between those in the labour force with a chronic health condition and those out of the

labour force with a chronic health condition (Table 3). After also adjusting for income, those in the labour force with a chronic health condition were still more than twice as likely to have participated in social or community activities away from the home compared to those not in the labour force with a chronic health condition (OR: 2.25, 95% CI: 1.69 – 3.00). Those in the labour force with a chronic health condition were now 2.08 times more likely to have participated in social or community activities away from the home, than people with a chronic health condition that were out of the labour force (OR 2.08, 95% CI: 1.76 – 2.45).

Discussion

A higher proportion of people who did *not* have a disabling chronic health condition participated in social and cultural activities, regardless of labour force participation status, than people who did have a disabling chronic health condition. Amongst people with a disabling chronic health condition, people who were in the labour force were significantly more likely to participate in social and cultural activities. In this study, the authors controlled for the effects of age, sex, level of education attainment, severity and type of disability, income unit type and level of income, indicating that labour force participation may have unique benefits that foster participation in social activities.

The economic benefit of labour force participation for people with a health condition has been well established. It is known that those who retire early due to ill health have a lower income, lower amounts of accumulated wealth and will reach the age of 65 years with lower amounts of savings to support their retirement than those who remain in the labour force [20-25]. However, this study has shown that there are additional social benefits of remaining in the workforce that are independent from the economic benefits.

Causality

A limitation of this study is that it was conducted using cross-sectional data. As a result of this, only the relationship between labour force participation and participation in social and cultural activities

at one point in time could be assessed. While participating in the labour force may facilitate social and cultural participation amongst those with a chronic health condition, it is also possible that participating in social and cultural activities may facilitate labour force participation amongst those with a disabling chronic health condition.

It has been theorised that being part of a social network gives members access to 'social leverage' – a form of social capital that is generated by the network of people. Social leverage helps members of a network to access information to improve their social position, such as details of employment opportunities or job referrals. However, access to this information is usually limited to members of the social network [26]. Developing a chronic health condition may result in individuals developing limitations that may restrict the type of tasks they can perform. This may require people to change jobs or industries to find employment that provides suitable working conditions. As such, being part of a social network may increase chances of labour force participation amongst those with poor health. However, despite theories that link social networks and finding employment, a longitudinal study of European Union countries reported no link between social networks and finding employment [27]. Thus, it is likely that labour force participation does facilitate social participation, rather than the other way around.

Health Implications

Regardless of causality, those with a disabling chronic health condition who are out of the labour force have lower rates of social and community participation, and so may be forgoing the health benefits social participation provides. Social capital – which includes, but is not limited to, social participation – is linked to health status [28-29]. Berry [30] has looked at the relationship between social capital and health in Australia and found that informal social connections and civic engagement were linked to better health outcomes. Informal social connections and civic engagement broadly align with the variables of social participation utilised in this study. Social exclusion has also been linked with poor health outcomes [31], and some studies have documented the improvement in health

that can be gained by those with chronic health conditions participating in social activities and through engaging in social networks [9-11].

This study has shown that people with a disabling chronic health condition who are not in the labour force are less likely to be participating in social and cultural activities. The study controlled for a number of variables that may have confounded this relationship – such as income, income unit type (being in a relationship or single, with or without children), and severity and type of disability. This indicates that participating in the labour force in itself may be an important driver of social participation and an important opportunity for social contact amongst those with chronic health conditions. Employment may provide people with chronic health conditions the opportunity to create social contacts and networks, and also the opportunity to engage with them.

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Author Contributions

EC conceived the study, carried out the data analysis and drafted the manuscript. DS provided expert advice into the design of the study and the interpretation of the results, and contributed to the final manuscript.

Ethics Approval

The use of this data was approved by the Australian Bureau of Statistics.

Data sharing

The data used in this study, which came from the *2009 Survey of Disability, Ageing and Carers*, is publically available through application to the Australian Bureau of Statistics.

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