Needs of Spouse Carers of World War II Veterans Before and After Widowhood

Project Report 3, December 2010

Prepared for the Australian Department of Veterans' Affairs

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Abbreviations

ALSWH	The Australian Longitudinal Study on Women's Health
CIs	Confidence intervals
DVA	Department of Veterans' Affairs
GADS	Goldberg Anxiety and Depression Scale
GP	General Practitioner
SF-36	The Medical Outcomes Study Short Form 36 Health Survey
TPI	Totally and Permanently Incapacitated (Pension)
DP	Other disability Pension

1. Executive summary

The overall aim of this project was to compare the health and use of health services of women in their 70's and 80's who are DVA clients, or wives of DVA clients, with similarly aged women in the general community who have no connections with DVA. The data are from the Australian Longitudinal Study on Women's Health (ALSWH) which involves a random sample of over 10,000 women born in 1921-26. They were recruited in 1996 and have been followed up every three years since then. The data were used to describe the women's physical and mental health, and their use of health and aged care services over time in relation to their roles as carers, if or when they are widowed, and their social and economic circumstances.

Project Report 3 focussed on changes in health and use of health services associated with becoming a widow. The analyses only involved ALSWH participants who were married at the baseline survey in 1996 and were widowed by survey 4 in 2005 (i.e., women who were already widowed, had never married, or were separated or divorced at baseline, or who were not widowed by 2005 were excluded).

The main comparisons were between women who received a gold card from DVA and those who had no association with DVA, and between women who had experienced widowhood in the last three years (recent widows) and those who were widowed more than three years from the time of the measurements.

The main findings were that recent widowhood was associated with increased risk of poor mental health but better levels of social interaction – regardless of whether or not the women had any relationship with DVA.

Women who cared for a husband receiving a TPI pension or other disability pension (DP), and who became gold cardholders when their husbands died, reported poorer physical health at the beginning of the study (i.e., before they were widowed) than other women. Nevertheless they fared as well through the widowhood transition as women not associated with DVA although, like other gold cardholders, they were higher users of GP services.

Clearly the stress of widowhood impacts greatly on women and it is possibly unrealistic to expect that DVA support could alleviate the effects over a three-year period. The data used for this analysis are not suitable for assessing shorter-term impacts, e.g., over 12 months (in the context of the ALSWH this would have required collection of additional data). However there was evidence that women who cared for a husband receiving a TPI pension / other disability pension, despite poorer initial health, were able to cope as well with widowhood as other women and it is possible that without DVA support they might not have managed as well.

2. Background

The aim of this project was to compare the health and use of health services of women in their 70's and 80's who are DVA clients, or wives of DVA clients, with similarly aged women in the general community who have no connections with DVA. The data are from the Australian Longitudinal Study on Women's Health (ALSWH) which involves a random sample of over 10,000 women born in 1921-26. They were recruited in 1996 and have been followed up every three years since then. The data were used to describe the women's physical and mental health, and their use of health and aged care services over time in relation to their roles as carers, if or when they are widowed, and their social and economic circumstances.

The purpose of the project was to provide evidence to inform policy options for DVA.

This project had three parts.

1.   Comparison of women who were DVA gold cardholders, women who cared for husbands who were DVA gold cardholders, and women who were unconnected to DVA on self-reported health and use of health care services. This work was presented in Project Report 1 in November 2009.

2.   Comparison of women who were DVA gold cardholders, wives of DVA gold cardholders, and women unconnected to DVA on Medical Benefit Scheme and Pharmaceutical Benefit Scheme item usage and costs. Linked ALSWH – Medicare data were used. This was presented in Project Report 2 in May 2010.

3.   Longitudinal examination of self-reported health and use of health care services for women, before and after widowhood – again in relation to connections with DVA. This work is presented in the present Project Report 3, December 2010.

3.   Introduction to Project Report 3

The aim was to examine longitudinal changes in self-reported health and use of health care services for women who are DVA gold cardholders before and after widowhood. The analyses only involved ALSWH participants who were married at the baseline survey in 1996 and were widowed by survey 4 in 2005 (i.e., women who were already widowed, had never married, or were separated or divorced at baseline, or who were not widowed by 2005 were excluded).

Two analytical approaches were used:

1. Cross-sectional data on mental health and physical functioning, social interaction and use of general practitioners (GPs) and specialist doctors were presented for each survey (survey 1, 1996; survey 2, 1999; survey 3, 2002; and survey 4, 2005). Statistical modelling was used to determine whether there were baseline differences between married women classified according to their relationship to DVA. The DVA women included in these analyses were those who had an existing relationship with DVA at survey 1 through their husbands and those who *would go onto have a relationship* with DVA through the death of their spouse at some time between 1999 and 2005 (surveys 2 to 4). These women were compared to married ALSWH participants who did not have a relationship with DVA and who would become widows and continued to have no relationship with DVA. As one of the measures of mental health, the GADS was first asked at survey 3, the analyses of GADS were only conducted for surveys 3 and 4.

2. Longitudinal analyses (capturing change over time) of the married ALSWH women using data collected at surveys 1, 2, 3 and 4. The outcomes were change in mental health, physical functioning, social interaction and use of GPs and specialist doctors in relation to becoming widowed. These analyses examined whether there were differences over time between the women with or without a relationship to DVA. In particular, these analyses determined whether becoming a war widow (and hence starting to receive services from DVA) resulted in different outcomes compared to not becoming a war widow.

4. Cross sectional analyses

4.1. Definitions used for cross sectional analyses

As the focus of Project Report 3 was on women becoming widowed, only ALSWH women who were married at survey 1 and became widowed by survey 4 were included.

The project team, in consultation with DVA, agreed on the following definitions to be used as the basis for the cross sectional analyses. These definitions reflected the relationship the women had to DVA and are similar in part to the definitions used in the two earlier project reports.

Table 1   Definitions used for cross sectional analyses of married women at survey 1 and became widowed by survey 4.

DVA status	Definition	ALSWH women total N
Spouse TPI/DP	Woman's husband receives TPI pension or other disability pension and has Gold Card	539
Other DVA	Woman's husband has Gold Card and / or DVA pension (e.g., service pension) but NOT TPI pension or other disability pension	89
Not DVA	ALSWH women participants with no connection to DVA, either themselves or through their husbands	909
Total		**1537**

TPI - Total and permanently incapacitated; DP – other disability pension

4.2. Overview of the outcome variables included in the analyses

Table 2 contains a brief summary of the outcome variables used in these analyses. For more detailed information on the sources of these variables and their measurement see Appendix 1.

Table 2   Outcome variables used in cross sectional and longitudinal analyses

Outcome variable	How measured	Interpretation of scores
Mental health (SF-36)	Categorical variable	Score < 53, indicates poorer mental health Score ≥53, better mental health
Anxiety and depression (GADS)	Continuous scale, range 0-18	Higher score reflects worse anxiety and depression
Physical functioning	Continuous scale, range 1-100	Higher score reflects better physical functioning
Social interaction	Continuous scale, range 4-12	Higher score reflects more social interaction
Visits to general practitioners in past 12 months	Categorical variable	<9 low users ≥ 9 high users
Visits to specialist doctors in past 12 months	Categorical variable	Yes No

4.3. Methods for the cross sectional analyses

For the continuous variables differences between groups of women defined by their DVA status and marital status were analysed using multiple regression models.

For the categorical variables differences between groups of women were analysed using logistic regression models.

Each analysis was adjusted for the potential confounders of age and how the women managed on their income (scored as impossible, difficult always, difficult sometimes, easy and not too bad). Adjusted means and 95% confidence intervals (95% CIs) were estimated using the 'least squares means' approach using the marginal distributions for the confounders.

4.4. Results for the cross sectional analyses

For the six outcomes, only physical functioning was found to differ significantly between the three groups of women (Table 1) at survey 1.

Figure 1 shows the mean scores (95% CIs) for physical functioning between the three DVA status groups at baseline. The wide 95% confidence intervals for the 'other DVA married' group reflect the small numbers of women in this group. This analysis showed that there were statistically significant differences between the three groups (p=0.048).
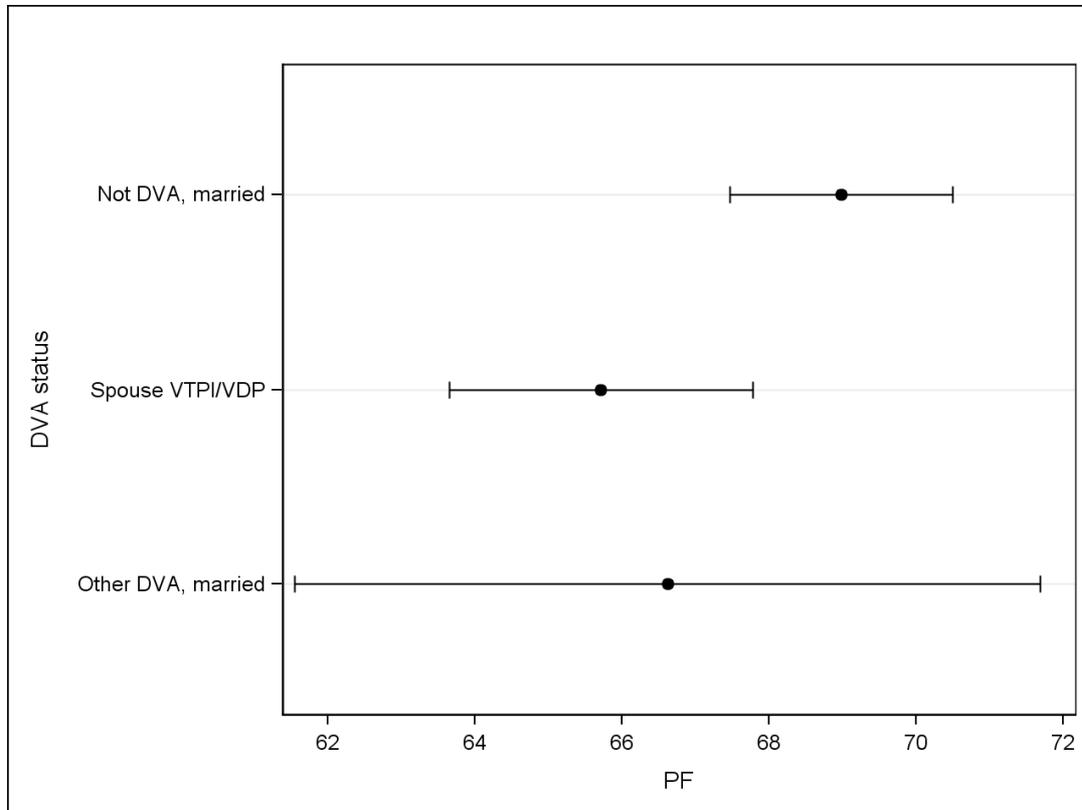
**Figure 1   Physical functioning adjusted average scores (95% CIs) at survey 1 by DVA status groups**

Table 3 presents the statistical comparisons between each pair of DVA status groups. This shows that the poorest physical functioning was found for women whose husbands had a TPI/other disability pension and that this score was significantly different to women who had no relationship with DVA (p = 0.014).

Table 3   Average physical functioning scores (95% CIs) at survey 1 by the DVA status groups and results of two-group comparisons

DVA / marital status	Average score	Lower 95% CI	Upper 95% CI
Spouse TPI/DP	65.82*	63.84	67.80
Other DVA, married	67.50	62.59	72.42
Not DVA, married	68.96*	67.44	70.49

Analysis adjusted for manage on income and age

* Significant difference between these two groups at p=0.014

For mental health (SF-36), anxiety and depression (GADS), social interaction, visits to GPs and visits to specialist doctors there were no statistically significant differences between the groups of women based on DVA status. The top sections in figures A1 to A6 in Appendix 2 show the average scores (95% CIs) for each of these outcomes at survey 1 (or survey 3 for anxiety and depression (GADS)).

5. Longitudinal analyses

5.1. Definitions used for the longitudinal analyses

The possible classifications of women at each survey are shown in Table 4.

Table 4   Possible classifications by DVA status and marital status at each survey

Survey 1 – all married	Survey 2 - widowed	Survey 2 - married	Survey 3 - widowed	Survey 3 - married	Survey 4 - all widowed
Spouse TPI /DP	Gold cardholder	Spouse TPI /DP	Gold cardholder	Spouse TPI /DP	Gold cardholder
Other DVA married	Other DVA widowed	Other DVA, married	Other DVA widowed	Other DVA, married	Other DVA, widowed
Not DVA, married	Not DVA, widowed	Not DVA, married	Not DVA, widowed	Not DVA, married	Not DVA, widowed

The project team, in consultation with DVA, agreed on the following definitions to be used as the basis for the variable describing the transition in DVA / marital status. At survey 1, all the women were married. At survey 2, the women were either married or had become widowed. By survey 3, the women could either be married, been widowed for more than three years (i.e., between surveys 1 and 2) or had recently become widowed (i.e., in the 3 years since survey 2). By survey 4, the women could have been widowed for more than three years (i.e., between surveys 1 and 3) or had recently become widowed (i.e., in the 3 years since survey 3). By survey 4 all of the women were widowed. The numbers of women in each of these categories is shown in Table 5.

Table 5   Definitions used for the variable describing nine possible transitions in DVA status / marital status, and numbers of women in each of the groups across surveys 1 to 4: those in the shaded areas become DVA gold cardholders when they are widowed.

DVA status	Change in marital status	Survey 1 (n) [a]	Survey 2 (n)	Survey 3 (n)	Survey 4 (n) [c]
	Married	539	345	178	-
Spouse TPI/DP [b]	Widowed ≤ 3 years	-	161	155	182
	Widowed > 3 years	-	-	156	329
	Married	89	61	34	-
Other DVA	Widowed ≤ 3 years	-	28	24	34
	Widowed > 3 years	-	-	26	50
	Married	909	585	279	-
Not DVA	Widowed ≤ 3 years	-	288	279	283
	Widowed > 3 years	-	-	276	575

TPI - Veterans total and permanently incapacitated ; DP - other disability pension
Missing data are due to missing marital status at individual surveys
[a] All women were married at Survey 1
[b] When these women were widowed they became DVA gold cardholders, indicated by shaded areas.
[c] All women were widowed by survey 4

For the longitudinal analyses, selected comparisons between four of the DVA / marital status groups were agreed with DVA to be the most relevant. These were:

1. Gold cardholder widowed ≤ 3 years *versus* not DVA widowed ≤ 3 years
2. Gold cardholder widowed > 3 years *versus* not DVA widowed > 3 years
3. Gold cardholder widowed > 3 years *versus* gold cardholder widowed ≤ 3 years
4. Not DVA widowed > 3 years *versus* not DVA widowed ≤ 3 years

5.2. Methods for the longitudinal analyses
Figures A1 to A6 in Appendix 2 summarise the scores for all six outcome variables (Table 2) by the six DVA/marital status groups (Table 4) for each of the surveys 1-4. They show unadjusted percentage or means and 95% confidence limits.

The longitudinal modelling involves simultaneously analysing data from different surveys but the same groups. For example, to compare DVA recent widows (gold cardholders) with recent widows not connected to DVA the data from successive surveys are used: gold

cardholder widowed ≤ 3 years (numbers are 161 + 155 + 182) *versus* not DVA widowed ≤ 3 years (numbers are 288 + 279 + 283) – see Table 5.

Each analysis comparing DVA /marital status groups was adjusted for other explanatory variables which may have been potential confounders. These were the women's age at survey 1, the baseline (survey 1) value of the outcome variable, survey number (i.e., 2, 3 or 4; to control for changes over time, e.g. due to increasing age) and the women's ability to manage on their available income at each survey, 1, 2, 3 and 4.

For continuous outcomes (physical functioning, anxiety and depression (GADS), social interaction), change scores are reported. For categorical outcomes (mental health (SF-36), GP and specialist doctor visits) odds ratios are reported.

Detailed results of the longitudinal analyses are given in Appendix 3. Statistically significant results for the four main comparisons are presented below.

5.3. Results for the longitudinal analyses

For three of the six outcomes, namely mental health (SF-36), social interaction and visits to GPs, the longitudinal analyses showed statistically significant differences for the four main comparisons.

Longitudinal analyses of mental health (SF-36) scores

The longitudinal analysis showed that the DVA /marital status groups had significantly different odds of having a mental health score ≤53 ($p \leq 0.0001$). Table 6 shows the odds ratios (95% CIs) for having a mental health score ≤53 (poor mental health) for the four main comparisons. Tables A1 and A2 in Appendix 3 show more detail of the statistical model from this analysis.

Table 6   Odds ratios for poor mental health the four main comparisons.

Comparison Groups	Odds Ratio	Lower 95% CI	Upper 95% CI	P
Gold cardholder widowed ≤ 3 years *versus* not DVA widowed ≤ 3 years	1.37	0.92	2.04	0.1199
Gold cardholder widowed > 3 years *versus* not DVA widowed > 3 years	0.78	0.42	1.44	0.4308
Gold cardholder widowed > 3 years *versus* gold cardholder widowed ≤ 3 years	0.30	0.17	0.53	<.0001
Not DVA widowed > 3 years *versus* not DVA widowed ≤ 3 years	0.53	0.35	0.79	0.0021

Analysis adjusted for baseline value, survey, manage on income and age

Two of the main comparisons were statistically significant. Gold cardholders who had been widowed for longer (> 3 years) had only a 1/3 of the risk of having poor mental health compared to gold cardholders who had been widowed more recently (within the last 3 years). Secondly, women with no relationship to DVA who had been widowed for longer (> 3 years) had only a 1/2 of the risk of having poor mental health compared to women with no relationship to DVA who had been widowed more recently (within the last 3 years).

There was no other statistically significant difference in odds of poor mental health found between gold cardholders or women with no relationship with DVA regardless of when they were widowed. This suggests that widowhood, not DVA status, is more likely to be linked to poor mental health, with recent widows having greater risk than longer term widows.

Longitudinal analyses of social interaction scores

The longitudinal analysis showed differences between the DVA/marital status groups in change in social interaction scores over time (p ≤ 0.0001). Table 7 shows the estimated change scores between survey 1 and survey 4 for the four main comparisons. Tables A7 and A8 in Appendix 3 show more detail of the statistical model from this analysis.

Table 7 Change in social interaction scores from survey 1 to survey 4 for the four main comparisons

Comparison Groups	Average change S1-S4	Difference	Lower 95% CI	Upper 95% CI	P
Gold cardholder widowed ≤ 3 years *versus* not DVA widowed ≤ 3 years	0.33 0.50	0.17	0.10	0. 33	0.038
Gold cardholder widowed > 3 years *versus* not DVA widowed > 3 years	-0.12 -0.11	0.01	-0.15	0.17	0.860
Gold cardholder widowed > 3 years *versus* gold cardholder widowed ≤ 3 years	-0.12 0.33	0.45	0.26	0.64	<.0001
Not DVA widowed > 3 years *versus* not DVA widowed ≤ 3 years	-0.11 0.50	0.61	0.45	0.75	<.0001

Analysis adjusted for survey, manage on income and age

For women who recently became widows, those who became gold cardholders and those with no relationship with DVA both showed increased change scores indicating more social interaction. However, the increase was slightly less for women who became gold cardholders (p=0.038).

For women who had been widowed longer there was no difference between change scores for women who had become gold cardholders and other women without a relationship to DVA (p=0.86).

Gold cardholders who were recently widowed had an increase in social interaction change scores (indicating more social interaction) compared to gold cardholders who had been widowed for longer who showed a decrease in their change scores (indicating less social interaction). This two group comparison was statistically significant at p ≤ 0.0001.

For women with no relationship to DVA, those who had recently become widows showed higher social interaction scores compared to those who had been widowed longer (p <.0001)

These results suggest that recency of widowhood, rather than DVA status, is linked to increased social interaction.

Longitudinal analyses of numbers of visits to GPs

The longitudinal analysis showed that the DVA/marital status groups had significantly different odds of having ≥ 9 visits to a GP (p = 0.011). Table 8 shows the odds ratios (95% CIs) for having ≥ 9 visits for the four main comparisons. Tables A9 and A10 in Appendix 3 show more detail of the statistical model from this analysis.

Table 8   Odds ratios of having ≥ 9 visits to a GP from survey 1 to survey 4 for the four main comparisons

Comparison Groups	Odds Ratio	Lower 95% CI	Upper 95% CI	P
Gold cardholder widowed ≤ 3 years *versus* not DVA widowed ≤ 3 years	1.41	1.10	1.81	0.007
Gold cardholder widowed > 3 years *versus* not DVA widowed > 3 years	1.53	1.18	1.98	0.001
Gold cardholder widowed > 3 years *versus* gold cardholder widowed ≤ 3 years	1.20	0.93	1.54	0.159
Not DVA widowed > 3 years *versus* not DVA widowed ≤ 3 years	1.11	0.90	1.36	0.335

Analysis adjusted for survey, manage on income and age

These analyses showed that being a higher user of GP services was associated with being a gold cardholder (compared to being a widow with no relationship with DVA) for both gold cardholders who were recent widows and those who had been widowed longer. These results support the results presented in Project Reports 1 and 2.

Longitudinal analyses of change in anxiety and depression (GADs) and physical functioning, and for visits to specialist doctors.

These analyses showed no statistically significant differences between the DVA/marital status groups for change in GADS scores (p = 0.42), change in physical functioning scores (p = 0.28) or odds of visiting a specialist doctor (p = 0.12). Tables A3 – A6, A11 and A12 in Appendix 3 show the summary statistics of these longitudinal analyses.

6. Conclusions

Project Report 3 focussed on changes in health and use of health services associated with becoming a widow. The main comparisons were between women who received a gold card from DVA and those who had no association with DVA, and between women who had experienced widowhood in the last three years (recent widows) and those who were widowed during the study period but more than three years from the time of the measurements.

The main findings were that recent widowhood was associated with increased risk of poor mental health but better levels of social interaction – regardless of whether or not the women had any relationship with DVA.

Women who cared for a husband receiving a TPI/other disability pension, and who became gold cardholders when their husband died, reported poorer physical health at the beginning of the study (i.e., before they were widowed) than other women. Nevertheless they fared as well through the widowhood transition as women not associated with DVA although, like other gold cardholders, they were higher users of GP services.

Clearly the stress of widowhood impacts greatly on women and it is possibly unrealistic to expect that DVA support could alleviate the effects over a three-year period. The data used for this analysis are not suitable for assessing shorter-term impacts, e.g., over 12 months (in the context of the ALSWH this would have required collection of additional data). However there was evidence that women who cared for a husband receiving a TPI/other disability pension, despite poorer initial health, were able to cope as well with widowhood as other women and it is possible that without DVA support they might not have managed as well.

7. References

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8. Appendix 1 Measurement of outcome variables

To gain a more complete picture of the women's mental health, this was assessed using two instruments as described below.

Mental health

Mental health was assessed using the mental health subscale of the Medical Outcomes Study 36-item Short Form Health Survey Version 1 (SF-36 Australian Version) (McCallum 1995). The SF-36 is a widely used and well validated generic profile measure which examines self-reported health-related quality of life that has been extensively reviewed for use with older populations. A recent structured review of generic self-assessed instruments for community dwelling older people identified the SF-36 as one of three instruments with extensive evidence of internal consistency, test-retest reliability, construct validity, concurrent validity and responsiveness (Haywood et al, 2005). The mental health subscale has a score range of 0 to 100. A mental health value ≤ 53 has been found to be an indicator of poorer mental health (Ware et al, 1993). Therefore, for this study, the mental health scale was dichotomised into < 53 and ≥53.

Anxiety and Depression

Mental health was further assessed using the 18 item Goldberg anxiety and depression symptom inventory (GADS) (Goldberg et al, 1988), an 18 item self-report symptom inventory with "yes" and "no" response options. The GADS is a brief list of items to detect anxiety and depression. The scores range from 0-18 with higher scores indicating more anxiety and depression. Psychometric analysis of ALSWH data has found that the 18-item GADS summed score is a valid and acceptable method of detecting elevated levels of depression and anxiety in the ALSWH cohort born in 1921-26.

Physical health

Physical health was assessed using the physical functioning (PF) subscale of the Medical Outcomes Study 36-item Short Form Health Survey Version 1 (SF-36 Australian Version) (McCallum 1995). The SF-36 is described above. The PF subscale has a score range of 0 to 100. A high score on the PF subscale reflects the ability to walk various distances, climb stairs, dress/bathe, carry groceries and engage in moderate and vigorous levels of activity (Ware et al, 1993).

Social interaction

The abbreviated 10-item version of the Duke Social Support Index (DSSI) (Koenig et al, 1993) was used to measure social support. The scale consists of two dimensions: satisfaction with social support (score range 6-18) and social interaction (score range 4-12), with higher scores indicating more social interaction. Only the social interaction dimension was used in this study. The abbreviated scale has been shown to be an acceptable, reliable and valid

brief instrument to include in mailed surveys to community-dwelling older women (Powers et al 2004).

Self-reported number of visits to general practitioners

Self-reported number of general practitioner (GP) visits in the last 12 months was asked at surveys 2 to 4. The participants had the option of answering: none, once or twice, 3 or 4 times, 5 or 6 times, 7 – 12 times, 13 – 24 times or 25 or more times. This was then dichotomised to high users (≥ 9 visits) or low users.

Self-reported number of visits to medical specialists

Self-reported number of visits to a specialist doctor is asked at each survey. The participants have the option of answering: none, once or twice, 3 or 4 times, 5 or 6 times, 7 – 12 times, 13 – 24 times or 25 or more times. The response was then dichotomised to whether the women visited a medical specialist at least once (yes, no).

9.   Appendix 2   Cross sectional analyses

This appendix contains graphs of cross sectional analyses at each survey time point of the outcome variables
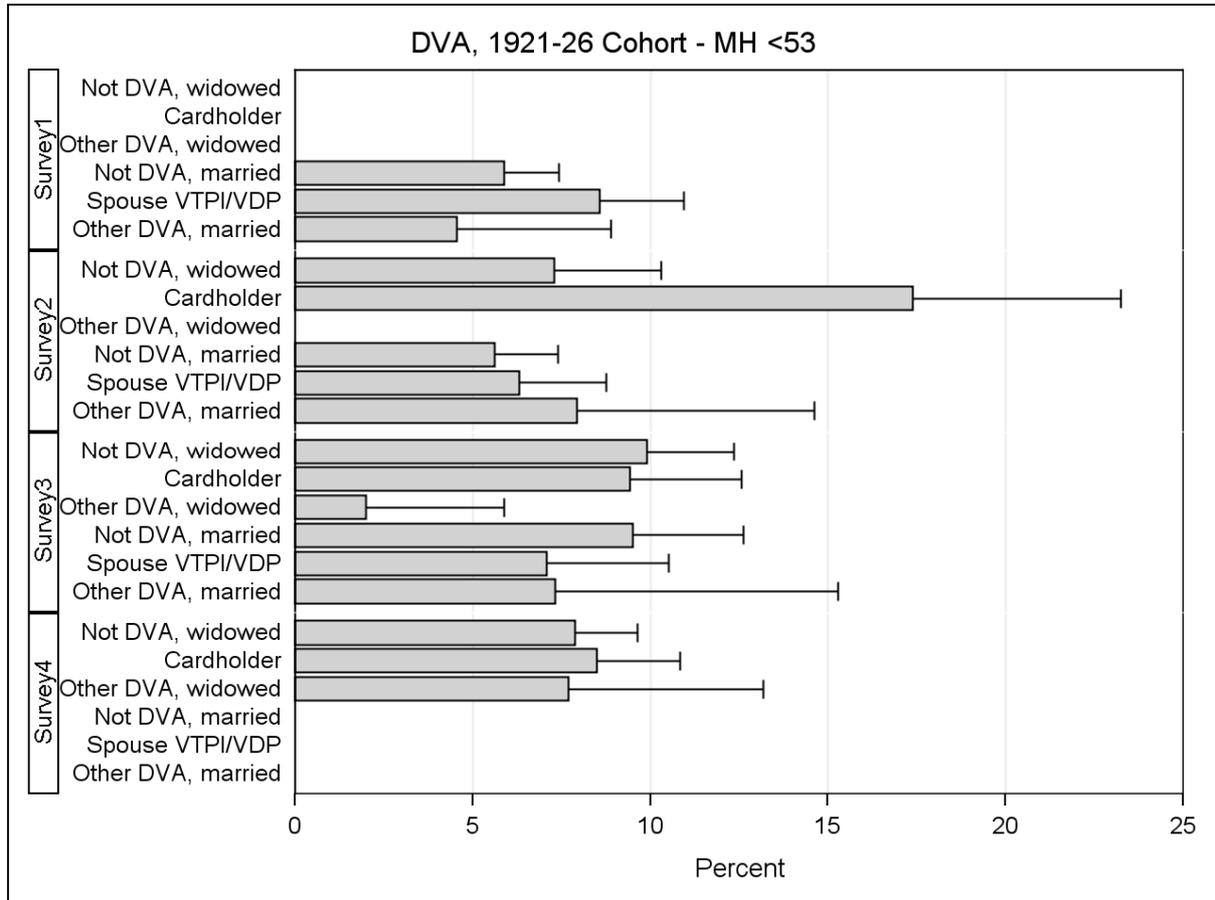
Mental health (SF-36)

Figure A1   Percentage of women (upper 95% CI) who had mental health scores ≤ 53 at surveys 1 to 4 for each DVA/marital status group

**Anxiety and depression (GADS)**
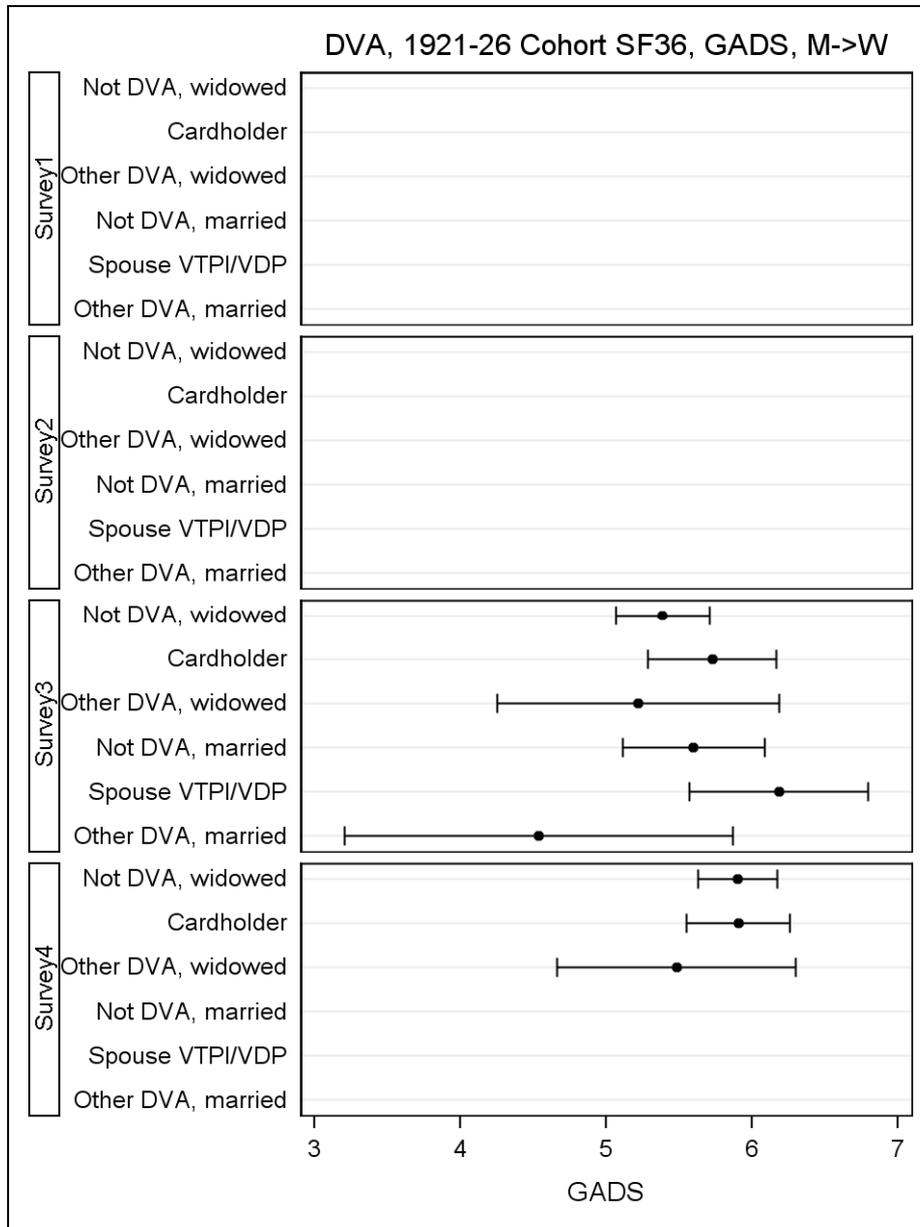
Figure A2   Mean scores (95% CIs) for GADS at surveys 3 and 4 for each DVA/marital status group

Physical functioning
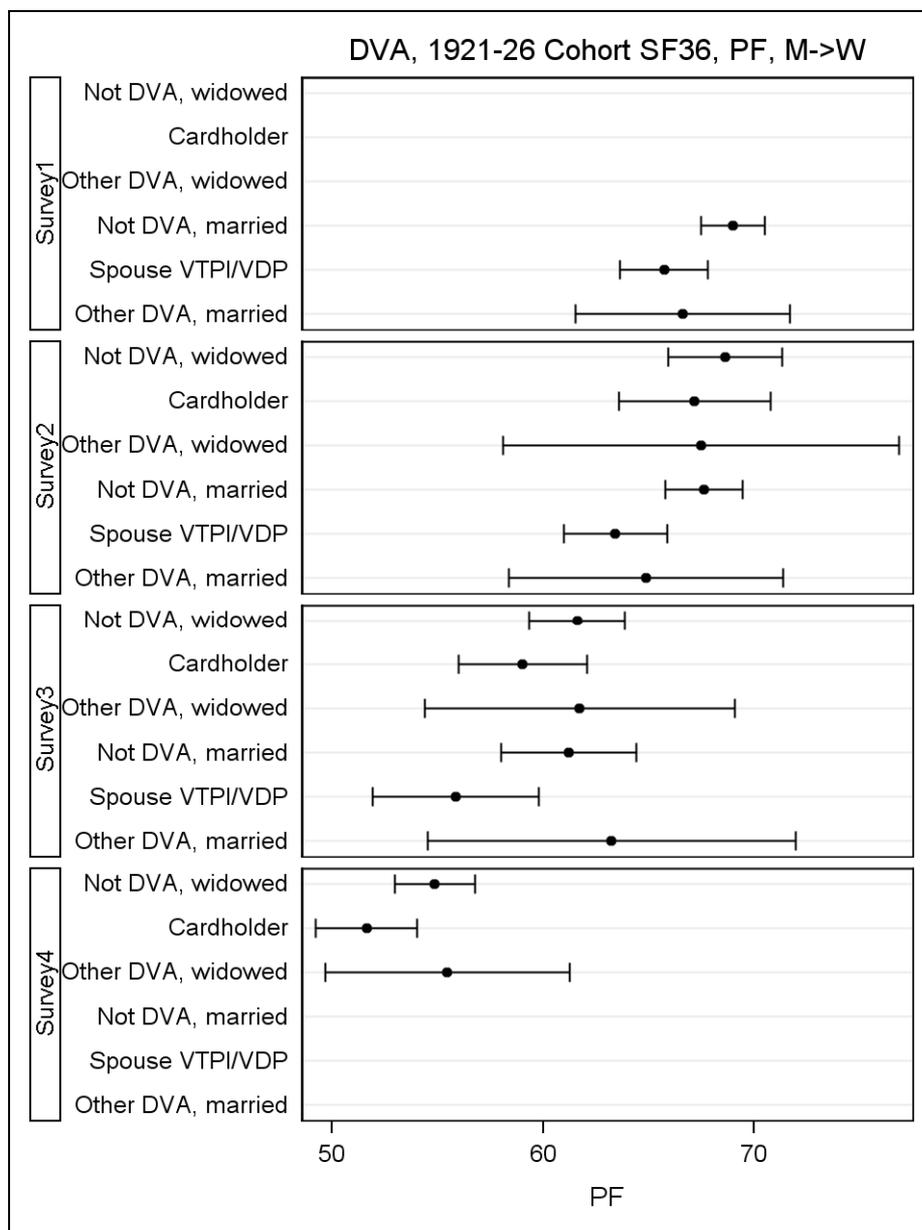
Figure A3   Mean scores (95% CIs) for physical functioning at surveys 1 to 4 for each DVA/marital status group

Social interaction
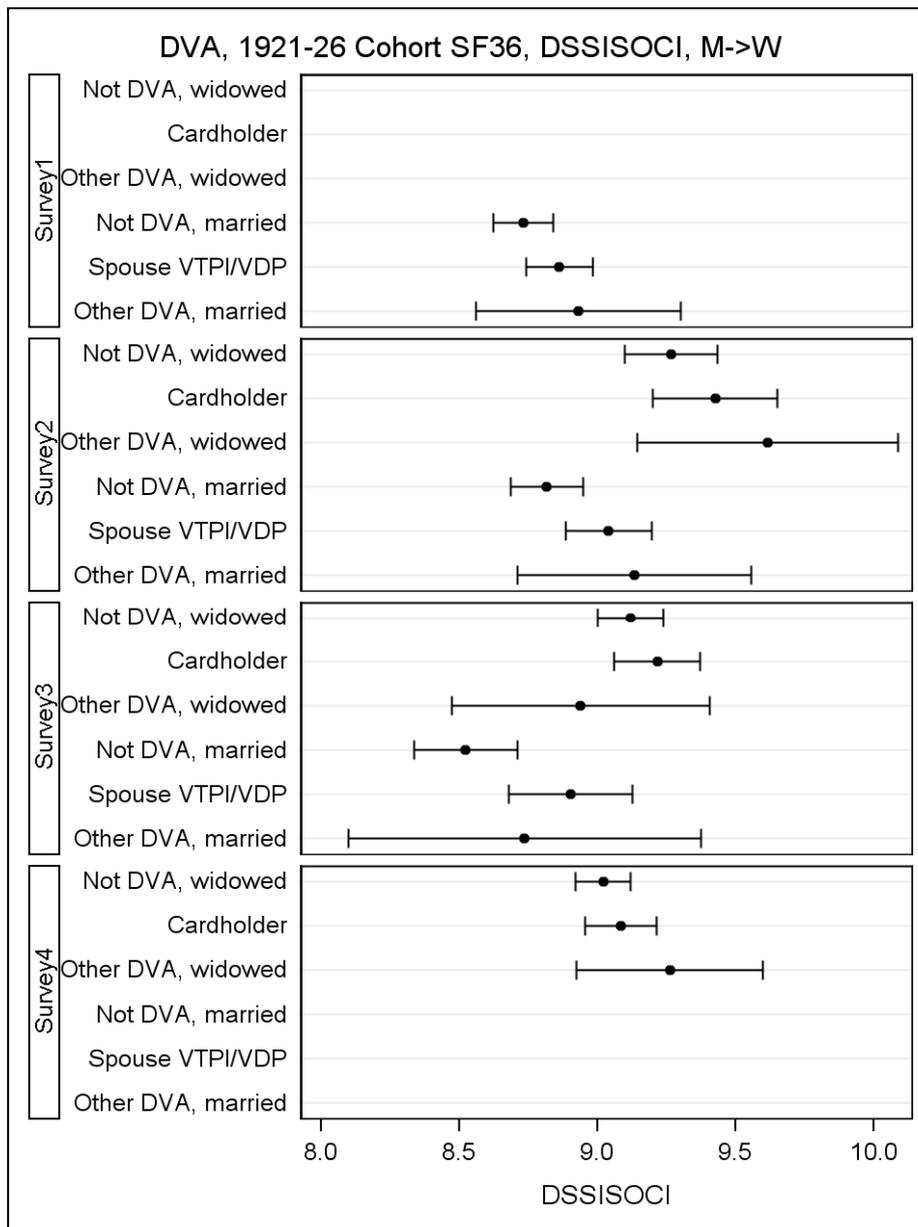
Figure A4   Mean scores (95% CIs) for social interaction at surveys 1 to 4 for each DVA/marital status group

Self-reported visits to GPs

DVA,1921-26 Cohort - 9 or more GP visits
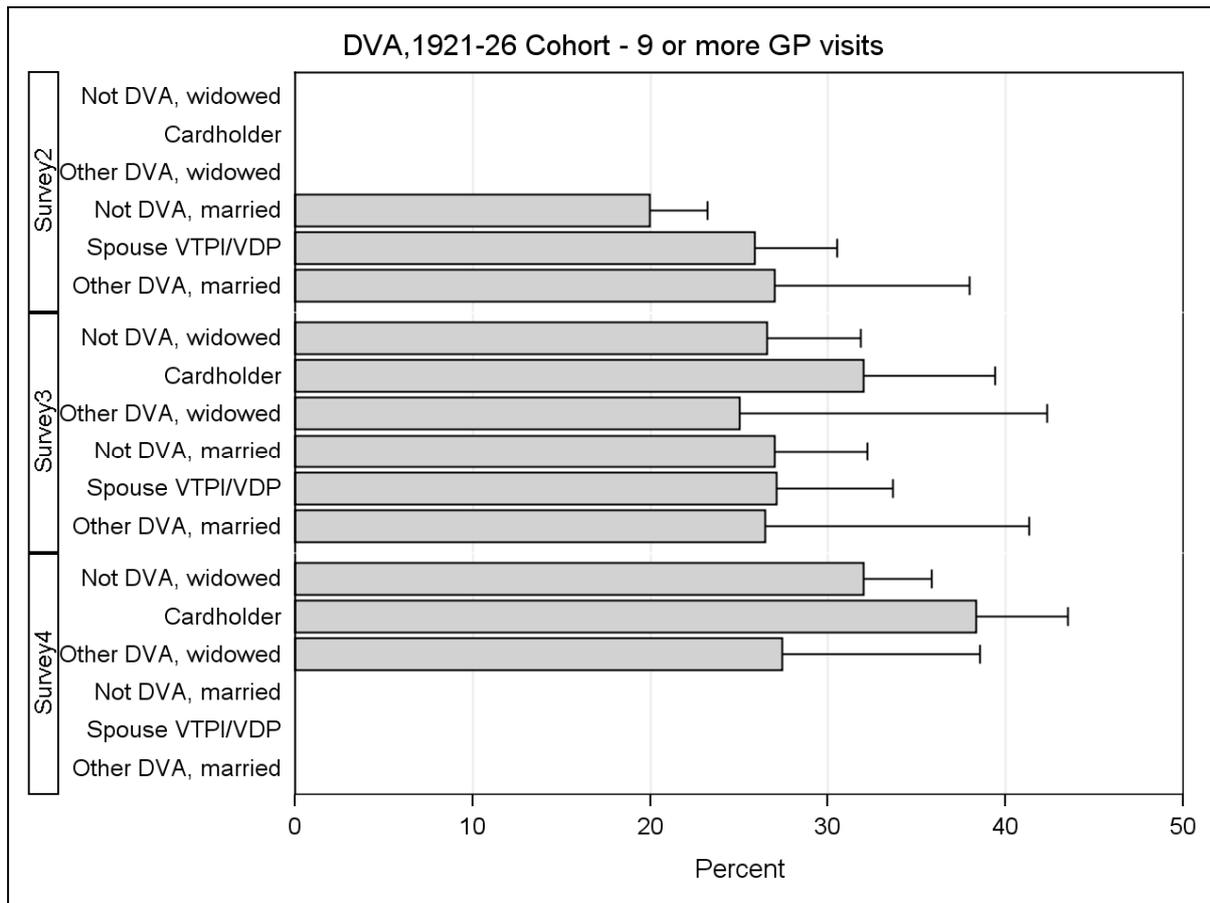
Figure A5   Percent of women (upper 95% CI) who were high users (≥ 9 visits) of GPs at surveys 1 to 4 for each DVA/marital status group

Self-reported visits to specialist doctors
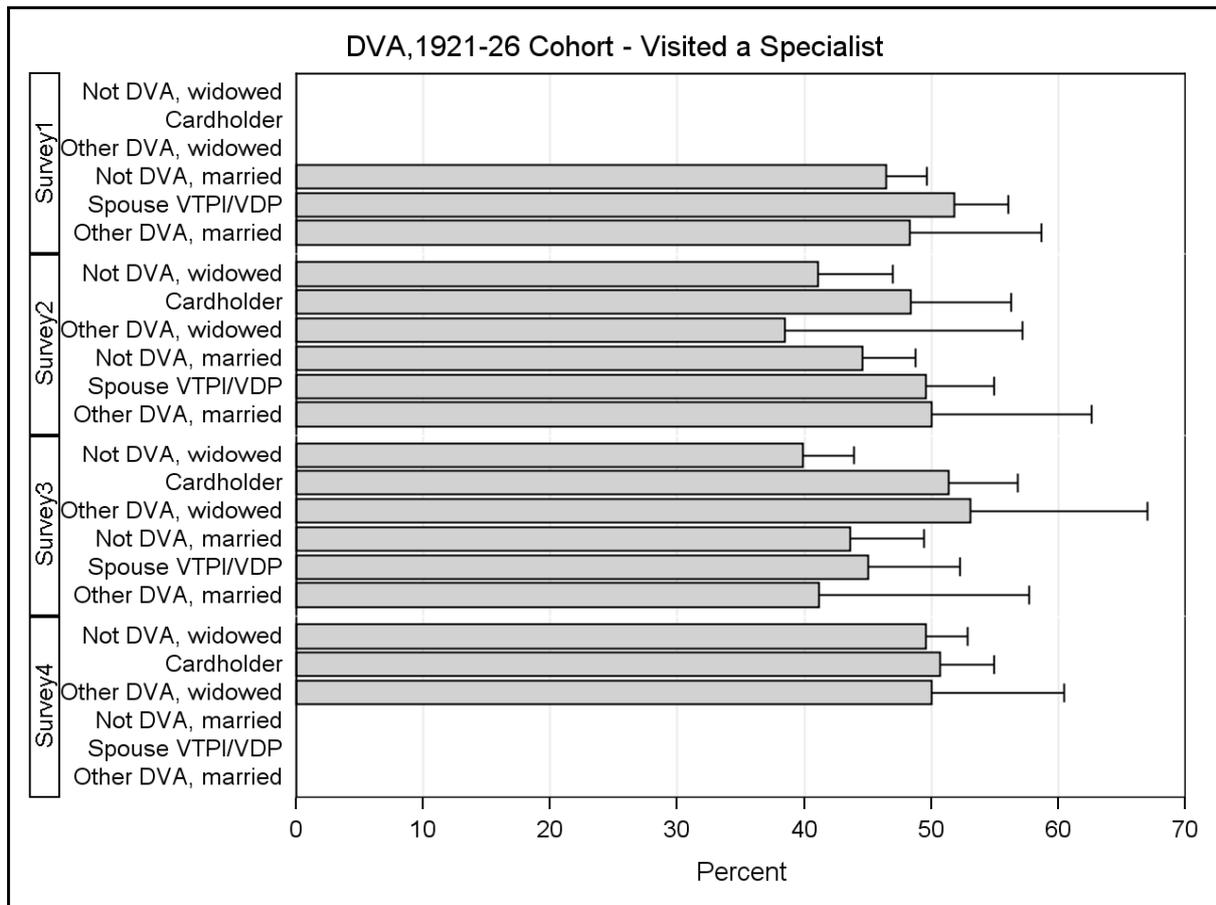
Figure A6   Percent of women (upper 95% CI) who visited a specialist doctor at surveys 1 to 4 for each DVA/marital status group

10. Appendix 3 Longitudinal analyses

This appendix contains the statistical results of the longitudinal analyses of the outcome variables

Mental health (SF-36)

Table A1 Overall results of logistic regression model for mental health scores

Variable	X^2 (df)	p
DVA/marital status	34.68 (8)	<.0001
Age	0.08 (1)	0.78
Survey	6.06 (1)	0.05
Manage on income	23.09 (4)	0.0001

Table A2 Logistic regression model results of mental health score ≤53 for individual DVA/marital status groups: odds ratios (95% CIs)

DVA Status	Odds Ratio	P value	Lower 95% CI	Upper 95%CI
Gold cardholder > 3 years	0.41	0.004	0.22	0.76
Gold cardholder ≤ 3 years	1.37	0.120	0.92	2.04
Other DVA, widowed > 3 years	0.28	0.059	0.07	1.05
Other DVA, widowed ≤ 3 years	0.37	0.106	0.11	1.23
Not DVA, widowed > 3 years	0.53	0.002	0.35	0.79
Not DVA, widowed ≤ 3 years (Reference category)	1.00	-	-	-
Other DVA, married	0.54	0.285	0.17	1.67
Spouse TPI/DP	0.59	0.057	0.34	1.02
Not DVA, married	0.61	0.026	0.40	0.94

Anxiety and Depression (GADS)

Table A3 Overall results of multiple regression model for GADS

Variable	F (df)	p
DVA/marital status	0.87 (8)	0.42
Survey 3 GAD score	112.90 (1)	<.0001
Age	0.75 (1)	0.38
Manage on income	2.05 (4)	0.08

Table A4 Multiple regression model results of GADS for individual DVA/marital status groups: average change scores (95% CIs) from survey 3 to 4

DVA Status	Average change S1-S4	P value	Lower 95% CI	Upper 95% CI
Gold cardholder > 3 years	0.19	0.29	-0.16	0.54
Gold cardholder ≤ 3 years	0.37	0.11	-0.09	0.83
Other DVA, widowed > 3 years	-0.07	0.87	-0.94	0.79
Other DVA, widowed ≤ 3 years	0.73	0.17	-0.31	1.77
Not DVA, widowed > 3 years	0.17	0.20	-0.09	0.43
Not DVA, widowed ≤ 3 years	0.83	<.0001	0.46	1.20

Note the groups 'Other DVA married', 'Spouse TPI/DP' and 'Not DVA married' could not be included as GADS data were only collected at surveys 3 and 4.

Physical functioning

Table A5 Overall results multiple regression model for physical functioning score

Variable	F (df)	p
DVA/marital status	1.23 (8)	0.28
Survey 1 PF score	84.71 (1)	<.0001
Age	16.40 (1)	<.0001
Survey	10.65 (1)	0.001
Manage on income	7.72 (4)	<.0001

Table A6 Multiple regression results for physical functioning for individual DVA/marital status groups: average change scores (95% CIs) from survey 1 to 4

DVA Status	Average change S1-S4	P value	Lower 95% CI	Upper 95% CI
Gold cardholder > 3 years	-3.95	<.0001	-5.85	-2.05
Gold cardholder ≤ 3 years	-5.42	<.0001	-7.17	-3.68
Other DVA, widowed > 3 years	-2.87	0.19	-7.20	1.46
Other DVA, widowed ≤ 3 years	-6.35	0.00	-10.47	-2.24
Not DVA, widowed > 3 years	-3.80	<.0001	-5.31	-2.28
Not DVA, widowed ≤ 3 years	-4.75	<.0001	-6.09	-3.42
Other DVA, married	-4.04	0.05	-8.12	0.04
Spouse TPI/DP	-7.16	<.0001	-8.96	-5.37
Not DVA, married	-4.89	<.0001	-6.33	-3.45

Note that overall DVA/marital status was not statistically significantly associated with change in physical functioning scores.

Social interaction

Table A7 Overall results multiple regression model for social interaction scores

Variable	F (df)	p
DVA/marital status	17.11 (8)	<.0001
Survey 1 DSSI score	189.15 (1)	<.0001
Age	2.71 (1)	0.10
Survey	30.42 (1)	<.0001
Manage on income	1.37 (4)	0.24

Table A8 Multiple regression results for social interaction scores for individual DVA/marital status groups: average change scores (95% CIs) from survey 1 to 4

DVA/marital status	Average change score from S1 – S4*	P value	Lower 95% CI	Upper 95% CI
Gold cardholder widowed >3 years	-0.1209	0.0887	-0.2602	0.0183
Gold cardholder widowed ≤ 3 years	0.3273	<.0001	0.1992	0.4554
Not DVA, married	-0.1555	0.0048	-0.2637	-0.0474
Not DVA, widowed >3 years	-0.1062	0.0598	-0.2168	0.0044
Not DVA, widowed ≤ 3 years	0.4990	<.0001	0.4000	0.5979
Other DVA, married	-0.0966	0.5301	-0.3981	0.2050
Other DVA, widowed >3 years	0.0770	0.6430	-0.2487	0.4027
Other DVA, widowed ≤ 3 years	0.4179	0.0078	0.1102	0.7256
Spouse TPI/DP	-0.0076	0.9112	-0.1420	0.1267

* calculated as least squares means in analysis

Analysis adjusted for survey, manage on income and age.

Visits to GPs (≥9)

Table A9 Overall results of logistic regression model for GP visits

Variable	X^2 (df)	p
DVA/marital status	19.82 (8)	0.011
Age	0.05 (1)	0.82
Survey	11.42 (1)	0.003
Manage on income	16.97 (4)	0.002

Table A10 Logistic regression model results of ≥9 visits to a GP for individual DVA/marital status groups: odds ratios (95% CIs)

DVA/marital status	Odds Ratio	P value	Lower 95% CI	Upper 95%CI
Gold cardholder > 3 years	1.69	0.0002	1.29	2.22
Gold cardholder ≤ 3 years	1.41	0.0068	1.10	1.81
Other DVA, widowed > 3 years	0.96	0.89	0.55	1.68
Other DVA, widowed ≤ 3 years	0.84	0.53	0.49	1.44
Not DVA, widowed > 3 years	1.11	0.34	0.90	1.36
Not DVA, widowed ≤ 3 years (Reference category)	1.00	-	-	-
Other DVA, married	1.27	0.38	0.75	2.17
Spouse TPI/DP	1.09	0.55	0.82	1.46
Not DVA, married	0.93	0.51	0.74	1.16

Visits to specialist doctor

Table A11 Overall results of logistic regression model for specialist visits

Variable	X^2 (df)	p
DVA/marital status	12.90 (8)	0.12
Age	0.03 (1)	0.86
Survey	18.78 (1)	0.0003
Manage on income	5.05 (4)	0.28

Table A12 Logistic regression model results of visits to a specialist doctor for individual DVA/marital status groups: odds ratios (95% CIs)

DVA/marital status	Odds Ratio	P value	Lower 95% CI	Upper 95% CI
Gold cardholder > 3 years	1.12	0.36	0.88	1.43
Gold cardholder ≤ 3 years	1.28	0.04	1.02	1.60
Other DVA, widowed > 3 years	1.20	0.45	0.75	1.91
Other DVA, widowed ≤ 3 years	1.11	0.64	0.71	1.75
Not DVA, widowed > 3 years	0.87	0.17	0.71	1.06
Not DVA, widowed ≤ 3 years (Reference category)	1.00	-	-	-
Other DVA, married	1.14	0.50	0.78	1.66
Spouse TPI/DP	1.24	0.06	0.99	1.54
Not DVA, married	1.02	0.84	0.84	1.23