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# **BMJ Open**

# The Regional South Australia Health Survey [RESONATE]: Study protocol

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# The Regional South Australia Health Survey [RESONATE]: Study protocol

## ABSTRACT

Introduction: Access to quality health care services is considered a moral right. However, for people living in regional, rural and remote locations, timely access to the services that they need may not always be possible because of structural and attitudinal barriers. This suggests that people living in regional areas may have unmet health care needs. The aim of this research will be to examine the health care needs, expectations and experiences of regional South Australians.

Methods and analysis: The Regional South Australia Health (RESONATE) survey is a cross-sectional study of adult health consumers living in any private or non-private dwelling, in any regional, rural, remote or very remote area of South Australia. Data will be collected using a 45-item, multi-dimensional, self-administered instrument, which has demonstrated acceptable psychometric properties, including good content validity and internal reliability, good test-retest reliability, and a high level of acceptability. The survey will be administered online and in hard-copy, with survey participants to be recruited over a seven-month period, using a comprehensive, multi-modal recruitment campaign.

19 Data will be descriptively analysed using frequency distributions and percentages, measures of 20 central tendency and variability, or medians and the interquartile range, where appropriate. 21 Subject to data type, differences between groups will be assessed using either independent 22 samples t-tests / Mann–Whitney U test, chi-square test, or ANOVA / Kruskal-Wallis. Independent 23 predictors of health service utilisation, expectations and experiences will be identified using 24 regression analysis.

1 2	1	Ethics and dissemination: The study has been approved by the university Human Research Ethics		
3 4 5	2	Committee. Findings from this study will be disseminated via community forums, broadcast, print		
6 7	3	online and social media, participant summary reports, peer-reviewed journals and conferences.		
8 9	4			
10 11	5	Key words: experience; expectation; health; protocol; needs; regional; rural; survey.		
12 13	6			
14 15	78	Strengths and limitations of the study		
16	o 9	Potentially the largest health survey ever to be conducted in regional South Australia		
17	10	<ul> <li>Provides new insights into the health service experiences, utilization and expectations of</li> </ul>		
18	11	people living in regional South Australia		
19 20	12	Generates much-needed information for future health services and health workforce		
21	13	planning		
22	14	<ul> <li>Potential limitations relate to selection bias</li> </ul>		
23	15			
24 25	16			
25 26	17	INTRODUCTION		
27 28	18	Almost 46% of the world's population live in regional/rural areas; these regions are often		
29 30	19	characterised by much lower population densities (i.e. global mean of 30.3 people per square		
31 32	20	kilometre) relative to urban areas (i.e. global mean of 1109.6 people per square kilometre).[1] In		
33 34 35	21	Australia, close to 33% of the nation's population live in regional/rural areas, with an estimated		
36 37	22	population density as low as 10.3 people per square kilometre.[2,3] The wide dispersion of the		
38 39	23	regional/rural Australian population creates a number of challenges for health care delivery; for		
40 41 42	24	instance, timely access to the services that regional/rural Australians need may not always be		
42 43 44	25	possible. This suggests that people living in regional/rural Australia may have unmet health care		
45 46	26	needs.		
47 48	27			
49 50 51	28	In Australia, and internationally, there is a mounting body of evidence supporting the view that		
52 53	29	conventional health care services are struggling to meet the health care needs of consumers,		
54 55	30	particularly those with chronic health conditions and those living in regional/rural areas.[4-10] The		
56 57 58	31	literature identifies a number of reasons why health consumer's needs are perhaps not being met.		
59 60		3 For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml		

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These barriers and enablers of healthcare utilisation can be broadly represented under two themes: structural factors (i.e. accessibility, cost, time/availability, convenience), and attitude (i.e. not needing medical support, stigma, improving symptoms, poor relationship with healthcare provider).[10-14] For regional/rural communities, these factors can be prominent obstacles to health care access.[15-17]

Andersen and Newman [18] take a less simplistic view of health service use by viewing these determinants through a behavioural lens. Their construct, the Anderson Behavioural Model of health service use, identifies four key drivers of health care utilisation: predisposing factors (i.e. prevailing conditions that predispose an individual to use a health service), enabling factors (i.e. circumstances that either facilitate or hinder health service use), need factors (i.e. actual or perceived need for health services) and personal health practices (i.e. behaviours that influence health status). While many studies have used the Anderson Behavioural Model to investigate the use of health services, the range of variables reported to date has been limited and highly variable.[19] There is also a need to better understand how these determinants of health care utilisation differ across populations (e.g. between regional areas); the study described herein aims to address these knowledge gaps.

19 The impact of unmet health care need (i.e. the difference between services required and services 20 received [9] at a systems level is not entirely clear. Several studies indicate that perceived unmet 21 health care need is associated with higher rates of hospital admission, longer lengths of stay, and 22 more frequent visits to emergency departments;[20-22] however, the evidence is not 23 consistent.[23] Other studies suggest that those expressing an unmet health need access health 24 care services less frequently;[5] this could have potential implications for consumer morbidity and 25 mortality due to deficits in disease screening, monitoring, maintenance and risk reduction.[24]

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At the individual level, the impact of unmet health care need can be substantial. Findings from several studies support an association between unmet health need and poorer quality of life,[25-27] worse mental health,[27] and psychological distress.[25] Although the direction of this association has yet to be elucidated, it does suggest that many health care systems have failed to some degree in meeting health consumer needs.

8 The significant implications of unmet patient need signify the importance of furthering our 9 understanding of the needs of health consumers; this is particularly evident in regional 10 populations where there are considerable barriers to health care access, as well as a large health 11 workforce maldistribution; as is the case in regional Australia. A more detailed exploration of the 12 determinants of health service utilisation at a State/Territory level may help to discern these 13 needs. A population of particular importance is regional South Australia, which has one of the 14 highest rates of chronic disease, co-morbidity, psychological distress, and fair/poor self-assessed 15 health status of any State or Territory of Australia. [28] In addressing the abovementioned points, 16 the proposed project will be the first known study to explore regional South Australian 17 expectations and experiences in using diverse conventional and complementary health care 18 services, with a view to better understanding the health care needs of this population.

19

## 20 METHODS & ANALYSIS

Study Design: The Regional South Australia Health (RESONATE) survey employs a cross-sectional study design. An overview of the study procedures, from questionnaire development through to the reporting of survey findings, is illustrated in Figure 1.

25 Figure 1. RESONATE flow chart26 [Insert Figure 1 here]

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2	1	Aim and objectives: RESONATE aims to examine the health care needs, expectations and
3		
4	2	experiences of regional, rural and remote South Australians. The objectives of the study will be to:
5 6	2	
7	3	1. Determine the prevalence of health conditions, surgical procedures and multi-morbidity
8		
9	4	among persons living in regional, rural and remote South Australia.
10	~	
11	5	2. Examine the extent to which health services / treatments are used by persons living in
12 13	6	regional runal and remate Couth Australia
14	6	regional, rural and remote South Australia.
15	7	2 Identify the information recourses used to inform a person's desision to use a health service
16	7	3. Identify the information resources used to inform a person's decision to use a health service
17	8	/ treatment in regional, rural and remote South Australia.
18 19	0	
20	9	4. Identify the barriers preventing persons from accessing health services / treatments in
21	,	4. Identity the burners preventing persons from decessing field in services 7 treatments in
22	10	regional, rural and remote South Australia.
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24 25	11	5. Ascertain the experiences of persons living in regional, rural and remote South Australia with
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27	12	various health services / treatments.
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29	13	6. Determine the attitudes of persons living in regional, rural and remote South Australia
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31 32	14	toward various health services / treatments.
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34	15	7. Determine the degree to which persons living in regional, rural and remote South Australia
35		
36	16	are satisfied with the health services / treatments they have received.
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38 39	17	8. Identify the determinants of health service utilisation, expectations and experiences among
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41	18	persons living in regional, rural and remote South Australia.
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43 44	19	
44 45	20	
46	20	Sample & Setting: The study will use non-probability (self-selection) sampling for economic and
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48	21	logistical reasons. The sample will comprise adult health consumers (i.e. a person over the age of
49	22	10 years who has used a health care convice or received any health intervention within the last
50 51		18 years who has used a health care service or received any health intervention within the last
52	23	twolve menthe) living in any private or nen private dwelling, in any regional, rural, remote or very
53	23	twelve months) living in any private or non-private dwelling, in any regional, rural, remote or very
54	24	remote area of South Australia (a region that covers 99.7% of the land area of the state).[3]
55	<u> 4</u> 7	
56 57	25	Participants also will be required to understand written English, and have either a fixed address
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(for delivery of the hard-copy version of the survey) or access to the internet (to access the online	IJ Ope
version of the survey). Based on a target population of 290,290 adults, the study will need to	n: first
survey at least 1,832 persons to achieve at worst $\pm$ 3% margin of error with 99% confidence for	publis
any individual item on the questionnaire.	hed as
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Questionnaire: The consumer utilisation, expectations and experiences of health care instrument	36/bmji ted by
(CONVERSATIONS) is a multidimensional, self-administered questionnaire designed to measure	open-2 copyri
health service utilisation, needs, expectations and experiences. The development, validation and	017-01 ight, in
description of the instrument are detailed below.	9784 o cludin
	n 13 A g for u
- Development: Development of the questionnaire was an iterative process that began with	pril 20 Enseig ses rei
an extensive search of the health motivation literature, the interrogation of pertinent	
surveys,[28-33] and informal consultation with clinicians, researchers and consumers. This	Downloaded nent Superie d to text and
generated a large pool of potential survey items. Using the Andersen behavioural model of	
health service use [18] as the conceptual framework for the survey, potential questions were	from http://bmjop ur (ABES) . data mining, Al tra
placed into one of four categories: predisposing factors, enabling factors, need factors and	.//bmjop ng, Al tr
personal health practices (see Figure 2). The research team reviewed the items under each	ppen.b
category to ensure questions adequately captured the construct of the framework (i.e. to	en.bmj.com/ on June 13, 2025 a
confirm face validity), questions were clear in their meaning, response items were	√ on Ju similar
comprehensive, and any duplicate/overlapping items were removed. The list of items,	une 13, · techn
comprising a combination of open questions (i.e. free text boxes) and closed questions (i.e.	ologie
Likert scales, dichotomous items and nominal items), were then re-ordered to improve the	at Agei s.
flow of the survey, to simplify data analysis, and to be more meaningful to respondents.	nce Bit
Figure 2. Conceptual framework of the CONVERSATIONS	en.bmj.com/ on June 13, 2025 at Agence Bibliographique de l aining, and similar technologies.
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Validation: The preliminary 51-item CONVERSATIONS underwent a two-stage psychometric evaluation. The first stage recruited a purposive sample of 9 international academics with expertise in survey design and/or health service utilisation to assess the content validity of the survey. Academics were identified through online staff directories of major Australian and international Universities. The sample comprised 3 academics from Australia, 2 from the US, and 1 each from Spain, New Zealand, the UK and Israel, of whom 5/9 were female. Using the method described by Polit and Hungler, [34] respondents indicated the relevance of each survey item by assigning one of four responses to each item: (1) question is relevant, (2) question is relevant but needs minor alteration, (3) question is relevant but needs major alteration, and (4) question is not relevant to the survey construct (i.e. health service need). The mean percentage of items with a score of 3 or 4 was calculated (i.e. agreement of relevancy) for each subsection of the survey, and for the survey overall, with good content validity defined as a level of agreement of 80% or above.[34,35] After the removal of seven irrelevant questions, the CONVERSATIONS survey was shown to have good scale-level content validity (mean 85.3% ± SD 13.1%), and good subscale-level content validity (Part A 84.1% ± 17.9%; Part B 86.7% ± 8.6%; Part C 81.8% ± 12.1%; Part D 88.8% ± 9.6%; Part E  $88.5\% \pm 0.9\%$ ). Of the retained questions, 16 items underwent minor editorial changes based on expert feedback.

In the second stage of evaluation, a purposive sample of 16 health consumers, of various age groups, and diverse cultural, educational and socio-economic backgrounds, were invited to complete the CONVERSATIONS, on two separate occasions, two-weeks apart. The purposive sample were identified through the research team's social network, and comprised 11 females and 5 males, aged between 21 and 66 years (mean age 42.9 ± 10.2 years), of whom

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12 resided in Australia, 3 in the UK and 1 in Singapore. Data from the baseline survey were used to assess the acceptability (i.e. frequency of missing data, completion time) and internal consistency (i.e. Cronbach's alpha) of the instrument, while the baseline and week two data were used to measure test-retest reliability (using the intraclass correlation coefficient [absolute agreement, two-way mixed-effects model] for scale and ordinal data, and Cohen's Kappa for nominal data). The analysis revealed a median completion time of 20 (IQR 15,30) minutes, and a high level of acceptability, with 15/16 (93.8%) participants submitting a fully-completed survey at baseline. The 6-item experience subscale and 16-item attitude subscale of the instrument demonstrated good to excellent internal reliability, [34] with values reported as follows: experience of conventional treatments (a component of Part C:  $\alpha$ =0.92); experience of CAM treatments (a component of Part D:  $\alpha$ =0.88); attitude toward conventional treatments (a component of Part C:  $\alpha$ =0.90); and attitude toward CAM treatments (a component of Part D:  $\alpha$ =0.88). There was also good to excellent agreement between baseline and week-2 scores for three out of five parts of the instrument (Mean reliability coefficients: Part A 0.962, 95% CI 0.950, 0.973; Part B 0.827, 95% CI 0.738, 0.917; Part C 0.768, 95% CI 0.701, 0.834), and moderate agreement between scores for two parts (Mean reliability coefficients: Part D 0.699, 95% CI 0.603, 0.795; Part E 0.741, 95% CI 0.408, 1.000). Overall, the CONVERSATIONS demonstrated good test-retest reliability (Overall mean reliability coefficient: 0.799, 95% CI 0.749, 0.849).[36] 

Given the multi-dimensionality and multi-disciplinary nature of the survey, as well as the self-administered design, there was no similar instrument for which the CONVERSATIONS could be compared against; as such, it was not possible to measure convergent validity.

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Description: The final instrument was a 44-item questionnaire divided into five sections: (i) demographic characteristics [Part A; 16 items, including age, sex, level of education, marital status, caregiver status, religion, English language proficiency, health literacy, country of birth, number of dependent children, regional classification, employment status, occupation, annual household income, current postcode, years lived in postcode], (ii) health status and lifestyle [Part B; 10 items, including overall health rating, diagnosed health conditions, surgical history, sedentary duration, dietary intake, level of physical activity, alcohol consumption, smoking status, illicit drug use, health screening activity], (iii) use of conventional / mainstream health services [Part C; 8 items, including 12-month / lifetime use of conventional health services, frequency of visits to conventional health providers, satisfaction with the quality of care received by conventional health providers, utilisation of conventional health treatments / services, information resources impacting the decision to use conventional health care services, experience with using conventional health services, barriers to accessing conventional health services, attitude toward conventional health services], (iv) use of complementary / alternative / natural health and self-prescribed services [Part D; 9 items, including 12-month / lifetime use of complementary health services, frequency of visits to complementary health providers, satisfaction with the quality of care received by complementary health providers, utilisation of complementary and self-prescribed health treatments / services, information resources impacting the decision to use complementary health care services, experience with using complementary health services, barriers to accessing complementary health services, attitude toward complementary health services], and (v) other [Part E; 1 item, measuring preferred mix of health services]. A hard-copy version and online version (using the SurveyMonkey™ platform) of the CONVERSATIONS have been generated for this study. 

Community

engagement

**Public lectures** 

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<b>Recruitment/procedures</b> : The project will implement a comprehensive, multi-modal recruitment		
campaign. The stra	tegies that will be employed ar	e outlined in Table 1. The majority of the
trategies will direc	t participants to the project we	bsite, which will contain further information
bout the study, th	e participant information sheet,	a web enquiry form, and a link to the online
urvey. To facilitate	recruitment, all participants who	o opt in will be entered into a draw to win o
of 20 x \$50 gift c	ards. Recruitment for the surv	ey will take place between April 2017 a
December 2017.		
	nt strategies for the RESONATE s	
Category	Strategy	Platform / agency / medium
Social media	Social media advertising	Facebook Ads (targeting a regional SA audience)
	Social media posts (i.e. study information / invitations)	Facebook pages, LinkedIn, Twitter
Broadcast media	Region-specific media releases	All television and radio stations in regional SA
	Television classified advertising	All television stations in regional SA
Print media	Region-specific media releases	All newspapers in regional SA
	Letterbox drops (i.e. study postcards)	All households, businesses and post-office boxes in regional SA
	Study flyers	All local councils, public libraries and community agencies in regional SA
	Newsletter articles	All local councils, community groups, sporting groups, primary health networks and industry groups in regional SA
Online media	Project website	Dedicated project website with exclusive wel address
	Email blasts	Distribution lists of local councils, community groups, sporting groups, health consume agencies, primary health networks, regiona development boards, industry groups and universities in regional SA

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groups.

All University of South Australia Department of

Rural Health major training sites; community

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Stakeholder group meetings	Country SA primary health network regional committees
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SA: South Australia

3 Planned analysis: Data will be exported from the SurveyMonkey platform into SPSS (v.22) for data 4 cleaning and statistical analysis. Missing data will be prevented by enacting forced survey 5 responses. Categorical data will be descriptively analysed using frequency distributions and 6 percentages. Measures of central tendency and variability will be used for continuous data where 7 values are normally distributed, whereas medians and the interquartile range will be used to 8 describe data that is not normally distributed. Differences between groups will be assessed using 9 independent samples t-tests or Mann-Whitney U test (for continuous variables), chi-square test 10 (for categorical variables), and ANOVA or Kruskal-Wallis (where there are more than two groups). 11 Independent predictors of health service utilisation (i.e. frequency of visits to health providers), 12 expectations (i.e. health care attitude score) and experiences (i.e. health care experience score) 13 will be identified using regression analysis. For estimates of prevalence, the survey sample 14 distribution will be adjusted by applying weights to the age, sex and location distribution of the 15 regional South Australian population, based on 2016 census data.

16

17 ETHICS & DISSEMINATION

18 **Ethics:** The study has been reviewed and approved by the Human Research Ethics Committee of 19 the University of South Australia, and will be conducted in accordance with the National Health & 20 Medical Research Council (NHMRC) national statement on ethical conduct in research, as well as 21 the approved study protocol.

22

Dissemination: The project will implement an extensive dissemination strategy to ensure findings
 from the project are effectively communicated to all key stakeholders, including the general

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public, health consumers, clinicians, researchers, educators and policy makers. The strategy will
include the generation and dissemination of peer-reviewed journal articles, the delivery of
national and international conference presentations and community forums, the distribution of
media releases via broadcast, print and social media, the publication of findings on the project
website, and the circulation of summary reports to study participants and key stakeholders.

## 7 DISCUSSION

8 Health inequalities and inadequate health service provision are major concerns facing regional 9 Australia. In fact, living in regional locations of Australia is associated with poorer health 10 outcomes, increased chronic disease mortality and lower life expectancy when compared with 11 living in metropolitan locations.[37-40] An important first step in addressing these health status 12 disparities is understanding the health care needs of the regional population. The RESONATE 13 survey will explore these needs in detail, as well as gain new insights into the health care 14 expectations and experiences of people living in regional South Australia.

In addition to shedding new light on the health care needs of regional South Australians, the findings of this research will make an important contribution to future health services planning. Using the needs-based health workforce planning framework, the health care needs of this population can be mapped against best practice care to estimate total health workforce requirements.[41] This model has already been applied to regional populations with diabetes [42] and mental illness, [43] and takes a far more "richer perspective on population needs" than other workforce planning approaches.[41] Given the considerable health workforce maldistribution in regional South Australia, [44-46] this is clearly an important next step for this research.

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If the RESONATE study is able to reach, or even exceed its target of 1,832 participants, it will represent the largest health survey ever conducted in regional South Australia. Acknowledging that there are methodological differences between surveys (e.g. different sampling methods), this will surpass the regional SA sample sizes of the Australian Bureau of Statistics National Health Survey by 124% (estimated n=818) [28] and the National Regional Wellbeing Survey by 63% (n=1,126).[47] Consequently, as the largest health survey of regional South Australians, the RESONATE study may report findings with a relatively higher level of precision and a smaller margin of error than previous Australian health surveys; [48] it may also enable meaningful subgroup analyses to be performed to better inform local policy and strategy (e.g. comparing needs between regions and statistical areas).[49] Despite its strengths, the RESONATE study does have a limitation - its susceptibility to self-selection bias. Whilst it is not possible to eliminate this bias entirely due to the use of non-probability (self-selection) sampling, the study has put in place multiple measures to help mitigate

15 this risk and the risk of other biases. These strategies include the implementation of a 16 comprehensive multi-modal recruitment campaign with extensive reach to the regional SA 17 population; intensive community engagement; the provision of alternative survey administration 18 methods; the use of an instrument with acceptable psychometric properties, and the weighting of 19 sample data.[50]

## 21 CONCLUSION

RESONATE will represent the largest health survey ever conducted in rural South Australia. The study will further our understanding of the state of health of rural South Australia, and will impart new insights into the health service experiences, utilization and expectations of this population. Accordingly, the findings of this research will help us to better understand the health care needs of

1 2	1	regional South Australians. An important next step of this research will be to map these needs
3 4	2	against existing health workforce supply to enable policy makers, health care providers,
5 6 7	3	researchers and educationalists to identify the health workforce required to better support the
, 8 9	4	health of regional South Australians.
10		
11	5	
12 13	6	DECLARATIONS
14 15	7	Acknowledgements
16 17	8	This research will be supported by infrastructure provided by the Department of Rural Health,
18 19 20	9	University of South Australia.
20 21 22	10	
23 24	11	Competing interests
25		
26	12	The authors declare that they have no competing interests.
27		
28	13	
29		
30	14	Funding
31 22		
32 33	15	This research received no specific grant from any funding agency in the public, commercial or not-
34	-	
35	16	for-profit sectors.
36	10	
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40	18	Authors' contributions
41	10	
42	19	ML conceptualised the project and drafted the manuscript. MJ, MG and EM reviewed and edited
43		
44 45	20	the manuscript. All authors read and approved the final manuscript.
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40 47	21	
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50	23	REFERENCES
51	24	1. The World Bank. World bank open data 2017. <u>http://data.worldbank.org/</u> . Accessed 10
52		
53	25	Aug 2017.
54	20	
55		
56		
57 58		
58 59		15
60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1 2 2	1	2.	Australian Bureau of Statistics. Regional Population Growth, Australia, 2016. Cat. No.
3 4 5	2		3218.0. Canberra, Australia: Australian Bureau of Statistics 2017.
6 7	3	3.	Australian Bureau of Statistics. ABS.Stat. Canberra, Australia: Australian Bureau of Statistics
8 9	4		2017.
10 11	5	4.	Ahern T, Gardner A, Courtney M. Exploring patient support by breast care nurses and
12 13 14	6		geographical residence as moderators of the unmet needs and self-efficacy of Australian
15 16	7		women with breast cancer: Results from a cross-sectional, nationwide survey. Eur J Oncol
17 18	8		Nurs 2016;23:72-80.
19 20 21	9	5.	Colman E, Missinne S, Bracke P. The Role of Perceived Helpfulness in Predicting Subjective
22 23	10		Unmet Need and the Frequency of Health Care Use. Arch Psych Nurs 2014;28:43-49.
24 25	11	6.	Dezetter A, Duhoux A, Menear M, et al. Reasons and Determinants for Perceiving Unmet
26 27 28	12		Needs for Mental Health in Primary Care in Quebec. Can J Psychiatr 2015;60:284-293.
29 30	13	7.	Ghuman SJ, Brackbill RM, Stellman SD, et al. Unmet mental health care need 10-11 years
31 32	14		after 9/11 terrorist attacks: 2011-2012 results from the World Trade Center Health
33 34	15		Registry. BMC Public Health 2014;14:491-499.
35 36 37	16	8.	Ou L, Chen J, Hillman K. Socio-demographic disparities in the utilisation of general practice
38 39	17		services for Australian children - Results from a nationally representative longitudinal
40 41	18		study. PLOS One 2017;12:e0176563.
42 43 44	19	9.	Pappa E, Kontodimopoulos N, Papadopoulos A, et al. Investigating Unmet Health Needs in
45 46	20		Primary Health Care Services in a Representative Sample of the Greek Population. Int J
47 48	21		Environ Res Public Health 2013;10:2017–2027.
49 50	22	10.	Ronksley PE, Sanmartin C, Campbell DJT, et al. Perceived barriers to primary care among
51 52 53	23		western Canadians with chronic conditions. Stat Can 2014;25:3-10.
54 55	24	11.	Andrade LH, Alonso J, Mneimneh Z, et al. Barriers to mental health treatment: results from
56 57	25		the WHO World Mental Health surveys. Psychol Med 2014;44:1303-17.
58 59			16

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1 2	1	12. Allen H, Wright B J, Harding K, et al. The Role of Stigma in Access to Health Care for the
3 4 5	2	Poor. <i>Milbank Q</i> 2014;92:289-318.
6 7	3	13. Monger M. Stigma: barrier to quality of life and health care. <i>HIV Clinician</i> 2011;23:1,4-5.
8 9	4	14. Sheikh-Mohammed M, MacIntyre CR, Wood NJ, et al. Barriers to access to health care for
10 11 12	5	newly resettled sub-Saharan refugees in Australia. Med J Aust 2006;185:594-597.
13 14	6	15. Hull M, Fennell KM, Vallury K, et al. A comparison of barriers to mental health support-
15 16	7	seeking among farming and non-farming adults in rural South Australia. Aust J Rural Health
17 18 19	8	2017; Epub ahead of print.
20 21	9	16. Stewart H, Jameson JP, Curtin L. The relationship between stigma and self-reported
22 23	10	willingness to use mental health services among rural and urban older adults. Psychol Serv
24 25 26	11	2015;12:141-148.
20 27 28	12	17. Syed ST, Gerber BS, Sharp LK. Traveling towards disease: transportation barriers to health
29 30	13	care access. J Community Health 2013;38:976-993.
31 32	14	18. Andersen R, Newman JF. Societal and individual determinants of medical care utilization in
33 34 35	15	the United States. <i>Milbank Q</i> 2005;83:1-28.
36 37	16	19. Babitsch B, Gohl D, von Lengerke T. Re-revisiting Andersen's Behavioral Model of Health
38 39	17	Services Use: a systematic review of studies from 1998–2011. Psychosoc Med
40 41 42	18	2012;9:Doc11.
43 44	19	20. Bindman AB, Grumbach K, Osmond D, et al. Preventable hospitalizations and access to
45 46	20	health care. J Am Med Assoc 1995;274:305–311.
47 48 49	21	21. McCusker J, Roberge D, Lévesque JF, et al. Emergency department visits and primary care
50 51	22	among adults with chronic conditions. <i>Med Care</i> 2010; 48: 972–980.
52 53	23	22. Zuckerman S, Shen YC. Characteristics of occasional and frequent emergency department
54 55 56	24	users: Do insurance coverage and access to care matter. <i>Med Care</i> 2004;42:176–182.
50 57 58		
59 60		17 For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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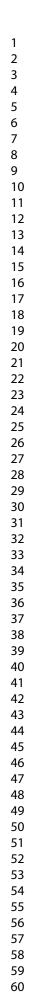
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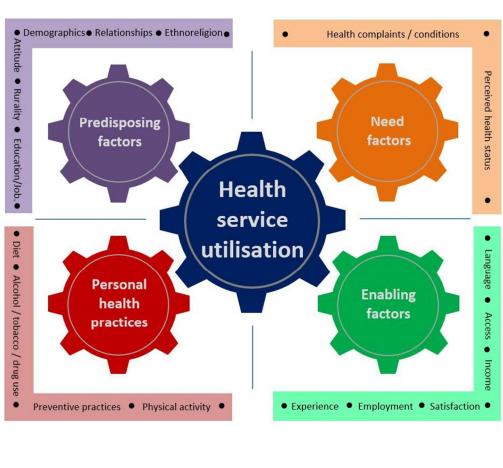
2	1	23. Ronksley PE, Sanmartin C, Quan H, et al. Association between perceived unmet health care
3 4 5	2	needs and risk of adverse health outcomes among patients with chronic medical
6 7	3	conditions. Open Med 2013;7:e21-30.
8 9	4	24. Ayanian JZ, Weissman JS, Schneider EC, et al. Unmet Health Needs of Uninsured Adults in
10 11 12	5	the United States. J Am Med Assoc 2000;284:2061-2069.
13 14	6	25. Hansen DG, Larsen PV, Holm LV, et al. Association between unmet needs and quality of life
15 16	7	of cancer patients: A population-based study. Acta Oncol 2013;52:391-399.
17 18 19	8	26. Slade M, Leese M, Cahill S, et al. Patient-rated mental health needs and quality of life
20 21	9	improvement. Br J Psychiatry 2005;187:256-261.
22 23	10	27. Smith AW, Parsons HM, Kent EE, et al. Unmet support service needs and health-related
24 25 26	11	quality of life among adolescents and young adults with cancer: the AYA HOPE study. Front
20 27 28	12	Oncol 2013;3:75.
29 30	13	28. Australian Bureau of Statistics. National Health Survey: First Results, 2014-15. Cat. No.
31 32 33	14	4364.0.55.001. Canberra: Australian Bureau of Statistics 2015.
33 34 35	15	29. Busato A, Donges A, Herren S, et al. Health status and health care utilisation of patients in
36 37	16	complementary and conventional primary care in Switzerland - an observational study.
38 39	17	Fam Prac 2006;23:116-124.
40 41 42	18	30. Chao M, Wade C, Kronenberg F, et al. Women's reasons for complementary and
43 44	19	alternative medicine use: Racial/ethnic differences. J Altern Complement Med
45 46	20	2006;12:719-720.
47 48 49	21	31. Simoes-Wust A, Rist L, Dettling M. Self-reported health characteristics and medication
50 51	22	consumption by cam users and nonusers: A swiss cross-sectional survey. J Altern
52 53	23	<i>Complement Med</i> 2014;20:40-47.
54 55		
56 57		
58 59		18

1 2	1	32. Sirois FM. Motivations for consulting complementary and alternative medicine
3 4 5	2	practitioners: A comparison of consumers from 1997–8 and 2005. BMC Complement Altern
6 7	3	Med 2008;8:16.
8 9	4	33. Women's Health Australia. Australian Longitudinal Study on Women's Health: Surveys.
10 11	5	2015. http://www.alswh.org.au/for-researchers/surveys#. Accessed 23 Jul 2015.
12 13 14	6	34. Polit D, Hungler B. Nursing Research: Principles and Methods (seventh edition).
15 16	7	Philadelphia, USA: Lippincott 2004.
17 18	8	35. Davis L. Instrument review: Getting the most from a panel of experts. App Nurs Res
19 20 21	9	1992;5:194-197.
22 23	10	36. Koo TK, Li MY. A guideline of selecting and reporting intraclass correlation coefficients for
24 25	11	reliability research. J Chiropr Med 2016;15:155-163.
26 27 28	12	37. Australian Institute of Health and Welfare (AIHW). Rural, regional and remote health -
28 29 30	13	indicators of health system performance. Rural Health Series no. 10, cat. No. PHE103.
31 32	14	AIHW: Canberra, Australia 2008.
33 34	15	38. Beckmann KR, Bennett A, Young GP, et al. Sociodemographic disparities in survival from
35 36 37	16	colorectal cancer in South Australia: a population-wide data linkage study. BMC Health Serv
38 39	17	Res 2016;16:24.
40 41	18	39. Chondur R, Li SQ, Lawton P. Does relative remoteness affect chronic disease outcomes?
42 43 44	19	Geographic variation in chronic disease mortality in Australia, 2002–2006. Aust NZ J Public
45 46	20	Health 2013;38:117-121.
47 48	21	40. Fox P, Boyce A. Cancer health inequality persists in regional and remote Australia. Med J
49 50 51	22	Aust 2014;201:445-446.
52 53	23	41. Segal L, Leach MJ. An evidence-based health workforce model for primary and community
54 55	24	care. Implement Sci 2011;6:93.
56 57 58		
58 59 60		19 For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

2	1	42. Segal L, Leach MJ, May E, et al. Regional primary care team to deliver best-practice
3 4 5	2	diabetes care: a needs-driven health workforce model reflecting a biopsychosocial
6 7	3	construct of health. <i>Diab Care</i> 2013;36:1898-1907.
8 9	4	43. Furber G, Segal L, Leach M, et al. Preventing mental illness: closing the evidence-practice
10 11 12	5	gap through workforce and services planning. BMC Health Serv Res 2015;15:283.
13 14	6	44. Department of Health. The national health workforce dataset (NHWDS): Physiotherapy
15 16	7	2015. Canberra, Australia: Department of Health 2015.
17 18 19	8	45. Department of Health. Nurses and midwives 2016 fact sheet. Canberra, Australia:
20 21	9	Department of Health 2017.
22 23	10	46. Tennant M, Kruger E, Shiyha J. Dentist-to-population and practice-to-population ratios: in a
24 25 26	11	shortage environment with gross mal-distribution what should rural and remote
26 27 28	12	communities focus their attention on? <i>Rural Remote Health</i> 2013;13:2518.
29 30	13	47. Centre for Research and Action in Public Health. 2015 regional wellbeing survey data
31 32	14	tables: South Australia - natural resource management regions. University of Canberra:
33 34 35	15	Canberra, Australia 2016.
35 36 37	16	48. Biau DJ, Kerneis S, Porcher R. Statistics in brief: the importance of sample size in the
38 39	17	planning and interpretation of medical research. Clin Orthop Relat Res 2008;466:2282-
40 41	18	2288.
42 43 44	19	49. De Vaus D. Surveys in social research (sixth edition). Oxon, UK: Routledge 2014.
45 46	20	50. Keeble C, Law GR, Barber S, et al. Choosing a method to reduce selection bias: a tool for
47 48	21	researchers. Open J Epidemiol 2015;5:155-162.
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51 52 53		
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58 59		20 For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml
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Section/Topic	ection/Topic Item # Recommendation				
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1		
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	NA		
Introduction					
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3-5		
Objectives	3	State specific objectives, including any prespecified hypotheses	5-6		
Methods					
Study design	4	Present key elements of study design early in the paper	5		
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	6, 10-11		
Participants	6	a) Give the eligibility criteria, and the sources and methods of selection of participants       6			
Variables	7	learly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if 9-10 pplicable			
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe 9-10 comparability of assessment methods if there is more than one group			
Bias	9	Describe any efforts to address potential sources of bias	13-14		
Study size	10	Explain how the study size was arrived at	6		
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	NA		
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	11-12		
		(b) Describe any methods used to examine subgroups and interactions	11-12		
		(c) Explain how missing data were addressed	11		
		(d) If applicable, describe analytical methods taking account of sampling strategy	12		
		(e) Describe any sensitivity analyses	NA		

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Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	NA
		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	NA
		(b) Indicate number of participants with missing data for each variable of interest	NA
Outcome data	15*	Report numbers of outcome events or summary measures	NA
Main results	16	( <i>a</i> ) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	NA
		(b) Report category boundaries when continuous variables were categorized	NA
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
Discussion			
Key results	18	Summarise key results with reference to study objectives	NA
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	
Interpretation	20	20 Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	
Generalisability	21	Discuss the generalisability (external validity) of the study results	NA
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	15

\*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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# The Regional South Australia Health Survey [RESONATE]: Study protocol

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# The Regional South Australia Health Survey [RESONATE]: Study protocol

## ABSTRACT

Background: Access to quality health care services is considered a moral right. However, for people living in regional locations, timely access to the services that they need may not always be possible because of structural and attitudinal barriers. This suggests that people living in regional areas may have unmet health care needs. The aim of this research will be to examine the health care needs, expectations and experiences of regional South Australians.

Methods: The Regional South Australia Health (RESONATE) survey is a cross-sectional study of adult health consumers living in any private or non-private dwelling, in any regional, rural, remote or very remote area of South Australia, and with an understanding of written English. Data will be collected using a 45-item, multi-dimensional, self-administered instrument, designed to measure health care need, barriers to health care access, and health service utilisation, attitudes, experiences and satisfaction. The instrument has demonstrated acceptable psychometric properties, including good content validity and internal reliability, good test-retest reliability, and a high level of acceptability. The survey will be administered online and in hard-copy, with at least 1,832 survey participants to be recruited over a seven-month period, using a comprehensive, multi-modal recruitment campaign.

**Discussion:** RESONATE will provide a detailed description of the state of health of regional South Australia, as well as impart further insights into the health service experiences, utilization and expectations of this population. Accordingly, the findings of this research will help us to better understand the health care needs of regional South Australians. An important next step of this research will be to map these needs against existing health workforce supply to enable policy

1 2	1	makers, health care providers, researchers and educationalists to identify the health workforce
3 4 5	2	required to better support the health of regional South Australians.
5 6 7	3	
, 8 9	4	<i>Key words</i> : experience; expectation; health; protocol; needs; regional; rural; survey.
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13 14	6	Strengths and limitations of this study
15 16 17	7	• This study will represent the largest survey ever conducted to examine the health care needs,
17 18 19	8	expectations and experiences of regional South Australians.
20 21	9	• The use of non-probability sampling, whilst economically and logistically advantageous, will
22 23	10	elevate the risk of self-selection bias.
24 25	11	• Multiple strategies will be put in place to mitigate the risk of sampling, undercoverage,
26 27 28	12	recruitment and participation bias, as well as measurement error.
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32	15	BACKGROUND
33 34	16	Almost 46% of the world's population live in regional, rural, remote or very remote areas
35 36	17	(hereafter referred to as regional); these regions are often characterised by much lower
37 38 39	18	population densities (i.e. global mean of 30.3 people per square kilometre) relative to urban areas
40 41	19	(i.e. global mean of 1109.6 people per square kilometre) [1]. In Australia, close to 33% of the
42 43	20	nation's population live in regional areas, with an estimated population density as low as 10.33
44 45	21	people per square kilometre [2,3]. The wide dispersion of the regional Australian population
46 47	22	creates a number of challenges for health care delivery; for instance, timely access to the services
48 49	23	that regional Australians need may not always be possible. The complexity of the Australian health
50 51 52	24	care system (i.e. the complex split of funding and responsibility across Federal, State and Territory
53 54	25	governments, and across public and private sectors) amplifies the problem by creating additional
55 56		

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challenges to the coordination, integration and continuity of health care services, especially for
 people living with chronic, co-morbid conditions and in regional locations [4].

In Australia, and internationally, there is a mounting body of evidence supporting the view that conventional health care services are struggling to meet the health care needs of consumers, particularly those with chronic health conditions and those living in regional areas [5-11]. The literature identifies some reasons why health consumer's needs are perhaps not being met. These barriers and enablers of healthcare utilisation can be broadly represented under two themes: structural factors (i.e. accessibility, cost, time/availability, convenience), and attitude (i.e. not needing medical support, stigma, improving symptoms, poor relationship with healthcare provider) [11-15]. For regional communities, these factors can be prominent obstacles to health care access [16-18].

Andersen and Newman [19] take a less simplistic view of health service use by viewing these determinants through a behavioural lens. Their construct, the Anderson Behavioural Model of health service use, identifies four key drivers of health care utilisation: predisposing factors (i.e. prevailing conditions that predispose an individual to use a health service), enabling factors (i.e. circumstances that either facilitate or hinder health service use), need factors (i.e. actual or perceived need for health services) and personal health practices (i.e. behaviours that influence health status). While many studies have used the Anderson Behavioural Model to investigate the use of health services, the range of variables reported to date has been limited and highly variable [20]. There is also a need to better understand how these determinants of health care utilisation differ across populations (e.g. between regional areas); the study described herein aims to address these knowledge gaps.

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The impact of unmet health care need (i.e. the difference between services required and services received) [10] at a systems level is not entirely clear. Several studies indicate that perceived unmet health care need is associated with higher rates of hospital admission, longer lengths of stay, and more frequent visits to emergency departments [21-23]; however, the evidence is not consistent [24]. Other studies suggest that those expressing an unmet health need access health care services less frequently [6]; this could have potential implications for consumer morbidity and mortality due to deficits in disease screening, monitoring, maintenance and risk reduction [25].

9 At the individual level, the impact of unmet health care need can be substantial. Findings from 10 several studies support an association between unmet health need and poorer quality of life [26-11 28], worse mental health [28] and psychological distress [26]. Although the direction of this 12 association has yet to be determined, it does suggest that many health care systems have failed to 13 some degree in meeting health consumer needs.

The significant implications of unmet consumer need signify the importance of furthering our understanding of the needs of health consumers; this is particularly evident in regional populations where there are considerable barriers to health care access, as well as a large health workforce maldistribution; as is the case in regional Australia. A more detailed exploration of the determinants of health service utilisation at a State/Territory level may help to discern these needs. A population of particular importance is regional South Australia, which has one of the highest rates of chronic disease, co-morbidity, psychological distress, and fair/poor self-assessed health status of any State or Territory of Australia [29]. In addressing the abovementioned points, the proposed project will be the first known study to explore regional South Australian expectations and experiences in using diverse conventional and complementary health care services, with a view to better understanding the health care needs of this population.

#### METHODS Study Design: The Regional South Australia Health (RESONATE) survey employs a cross-sectional study design. An overview of the study procedures, from questionnaire development through to the reporting of survey findings, is illustrated in Figure 1. Aim and objectives: RESONATE aims to examine the health care needs, expectations and experiences of regional South Australians. The objectives of the study will be to: 1. Determine the 12-month/lifetime prevalence of health conditions (*i.e. diagnosed or treated* by a health professional), surgical procedures, and multi-morbidity (measured using the multiple chronic condition index [30]) among persons living in regional South Australia. 2. Examine the extent to which health services / treatments were used (*i.e. frequency of use in* the previous twelve months) by persons living in regional South Australia. 3. Identify the information resources (e.g. internet, friend, health provider) used in the previous twelve months to inform a person's decision to use a health service / treatment in regional South Australia. 4. Identify the extent (using a 4-point frequency scale) to which structural (e.g. cost, distance) and attitudinal (e.g. stigma) barriers prevent persons from accessing health services / treatments in regional South Australia. 5. Ascertain the experiences (i.e. lifetime prevalence of adverse events, miscommunication, misunderstanding and disrespect, using a 4-point frequency scale) of persons living in regional South Australia with various health services / treatments. 6. Determine the attitudes of persons living in regional South Australia toward various health services / treatments (i.e. perceptions of the roles, values, accessibility and quality of a heath care service, using a 5-point Likert scale).

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7. Determine the degree (using a 5-point Likert scale) to which persons living in regional South

- Australia are satisfied with the quality of health services / treatments they have received.
- 8. Identify the determinants of health service utilisation, expectations and experiences among persons living in regional South Australia.

6 Sample & Setting: The study will use non-probability (self-selection) sampling for economic and 7 logistical reasons. The sample will comprise adult health consumers (i.e. a person over the age of 8 18 years who has used a health care service or received any health intervention within the last 9 twelve months) living in any private or non-private dwelling, in any regional, rural, remote or very 10 remote area of South Australia (a region that covers 99.7% of the land area of the state [3]). 11 Participants also must be able to read and understand written English, comprehend the 12 information provided, and have either a fixed address (for delivery of the hard-copy version of the 13 survey) or access to the internet (to access the online version of the survey). Excluded will be 14 people with severe cognitive impairment, severe vision impairment, and those not able to provide 15 consent. Based on a target population of 290,290 adults, the study will need to survey at least 16 1,832 persons; this is based on a  $\pm$  3% margin of error at the 99% confidence level.

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18 Questionnaire: The consumer utilisation, expectations and experiences of health care instrument 19 (CONVERSATIONS) is a multidimensional, self-administered questionnaire designed to measure 20 health service utilisation, needs, expectations and experiences. The development, validation and 21 description of the instrument are detailed below.

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Development: Development of the questionnaire was an iterative process that began with
 an extensive search of the health motivation literature, the interrogation of pertinent
 surveys [30-35], and informal consultation with clinicians, researchers and consumers. This

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1 2	1	generated a large pool of potential survey items. Using the Andersen behavioural model of
3 4	2	health service use [19] as the conceptual framework for the survey, potential questions were
5 6	3	placed into ano of four estagories, prodictoring factors, applying factors, pood factors and
7 8	3	placed into one of four categories: predisposing factors, enabling factors, need factors and
9	4	personal health practices (see Figure 2). The research team reviewed the items under each
10 11 12	5	category to ensure questions adequately captured the construct of the framework (i.e. to
13 14	6	confirm face validity), questions were clear in their meaning, response items were
15 16	7	comprehensive, and any duplicate/overlapping items were removed. The list of items,
17 18	8	comprising a combination of open questions (i.e. free text boxes) and closed questions (i.e.
19 20 21	9	Likert scales, dichotomous items and nominal items), were then re-ordered to improve the
22 23	10	flow of the survey, to simplify data analysis, and to be more meaningful to respondents.
24	11	
25	11	Validation: The proliminary E1 itom CONVERSATIONS underwant a two stage psychometric
26	12	- Validation: The preliminary 51-item CONVERSATIONS underwent a two-stage psychometric
27 28 29	13	evaluation. The first stage recruited a purposive sample of 9 international academics with
30 31	14	expertise in survey design and/or health service utilisation, as well as a track record in
32 33 34	15	regional health research, to assess the content validity of the survey. Academics were
34 35 36	16	identified through online staff directories of major Australian and international Universities.
37 38	17	The sample comprised 3 academics from Australia, 2 from the US, and 1 each from Spain,
39 40	18	New Zealand, the UK and Israel, of whom 5/9 were female. Using the method described by
41 42 43	19	Polit and Hungler [36], respondents indicated the relevance of each survey item by assigning
44 45	20	one of four responses to each item: (1) question is relevant, (2) question is relevant but
46 47	21	needs minor alteration, (3) question is relevant but needs major alteration, and (4) question
48 49 50	22	is not relevant to the survey construct (i.e. health service need). The mean percentage of
50 51 52	23	items with a score of 3 or 4 was calculated (i.e. agreement of relevancy) for each subsection
53 54	24	of the survey, and for the survey overall, with good content validity defined as a level of
55 56 57	25	agreement of 80% or above [36,37]. After the removal of seven irrelevant questions, the

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CONVERSATIONS survey was shown to have good scale-level content validity (mean 85.3% ± SD 13.1%), and good subscale-level content validity (Part A 84.1% ± 17.9%; Part B 86.7% ± 8.6%; Part C 81.8% ± 12.1%; Part D 88.8% ± 9.6%; Part E 88.5% ± 0.9%). Of the retained questions, 16 items underwent minor editorial changes based on expert feedback. In the second stage of evaluation, a purposive sample of 16 health consumers, of various age groups, and diverse cultural, educational and socio-economic backgrounds (including one-third with lived experience in regional Australia), were invited to complete the CONVERSATIONS, on two separate occasions, two-weeks apart. The purposive sample was identified through the research team's social network, and comprised 11 females and 5 males, aged between 21 and 66 years (mean age 42.9 ± 10.2 years), of whom 12 resided in Australia, 3 in the UK and 1 in Singapore. Data from the baseline survey were used to assess the acceptability (i.e. frequency of missing data, completion time) and internal consistency (i.e. Cronbach's alpha) of the instrument. The baseline and week two data were used to measure test-retest reliability (using the intraclass correlation coefficient [absolute agreement, two-way mixed-effects model] for scale and ordinal data, and Cohen's Kappa for nominal data). 

The analysis revealed a median completion time of 20 (IQR 15,30) minutes, and a high level of acceptability, with 15/16 (93.8%) participants submitting a fully-completed survey at baseline. The 6-item experience subscale and 16-item attitude subscale of the instrument demonstrated good to excellent internal reliability [36], with values reported as follows: experience of conventional treatments (a component of Part C:  $\alpha$ =0.92); experience of CAM treatments (a component of Part D:  $\alpha$ =0.88); attitude toward conventional treatments (a component of Part C:  $\alpha$ =0.90); and attitude toward CAM treatments (a component of Part D:

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α=0.88). There was also good to excellent agreement between baseline and week-2 scores for three out of five parts of the instrument (Mean reliability coefficients: Part A 0.962, 95% CI 0.950, 0.973; Part B 0.827, 95% CI 0.738, 0.917; Part C 0.768, 95% CI 0.701, 0.834), and moderate agreement between scores for two parts (Mean reliability coefficients: Part D 0.699, 95% CI 0.603, 0.795; Part E 0.741, 95% CI 0.408, 1.000). Overall, the CONVERSATIONS demonstrated good test-retest reliability (Overall mean reliability coefficient: 0.799, 95% CI 0.749, 0.849) [38].

Given the multi-dimensionality and multi-disciplinary nature of the survey, as well as the
 self-administered design, there was no similar instrument for which the CONVERSATIONS
 could be compared against; as such, it was not possible to measure convergent validity.

Description: The final instrument was a 44-item questionnaire divided into five sections: (i) demographic characteristics [Part A; 16 items, including age, sex, level of education, marital status, caregiver status, religion, English language proficiency, health literacy, country of birth, number of dependent children, regional classification, employment status, occupation, annual household income, current postcode, years lived in postcode], (ii) health status and lifestyle [Part B; 10 items, including overall health rating, diagnosed health conditions, surgical history, sedentary duration, dietary intake, level of physical activity, alcohol consumption, smoking status, illicit drug use, health screening activity], (iii) use of conventional / mainstream health services [Part C; 8 items, including 12-month / lifetime use of conventional health services, frequency of visits to conventional health providers, satisfaction with the guality of care received by conventional health providers, utilisation of conventional health treatments / services, information resources impacting the decision to use conventional health care services, experience with using conventional health services,

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Category Strategy	Platform / agency / medium 11 nj.com/site/about/guidelines.xhtml	que de
1: Recruitment strategies for the RESONATE s		ngraph
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services], (iv) use of complementary / alternative / natural health and self-services [Part D; 9 items, including 12-month / lifetime use of complement services, frequency of visits to complementary health providers, satisfaction with of care received by complementary health providers, utilisation of complementa prescribed health treatments / services, information resources impacting the deci complementary health care services, experience with using complementary heal barriers to accessing complementary health services, attitude toward complement services], and (v) other [Part E; 1 item, measuring preferred mix of health service copy version and online version (using the SurveyMonkey™ platform CONVERSATIONS have been generated for this study. **Recruitment/procedures:** The project will implement a comprehensive, multi-modal r

campaign, and in accordance with a community-based participatory approach, v extensive community engagement. The strategies that will be employed are outlined The majority of these strategies will direct participants to the project website, which further information about the study, the participant information sheet, a web enquiry link to the online survey. Participants who cannot (or prefer not to) complete the su will be advised to contact the research department, using the toll-free telephone provided, to have the participant information sheet, survey and reply-paid envelope po them. To facilitate recruitment, all participants who opt in will be entered into a draw of 20 x \$50 gift cards. Recruitment for the survey will take place between April 2017 2018.

# Table 1: Recruitment strategies for the RESONATE survey

Category	Strategy	Platform / agency / medium
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Social media	Social media advertising	Facebook Ads (targeting a regional SA audience)
	Social media posts (i.e. study information / invitations)	Facebook pages, LinkedIn, Twitter
Broadcast media	Region-specific media releases	All television and radio stations in regional SA
	Television classified advertising	All television stations in regional SA
Print media	Region-specific media releases	All newspapers in regional SA
	Letterbox drops (i.e. study postcards)	All households, businesses and post-office boxes in regional SA
	Study flyers	All local councils, public libraries and community agencies in regional SA
	Newsletter articles	All local councils, community groups, sporting groups, primary health networks and industry groups in regional SA
Online media	Project website	Dedicated project website with exclusive web address
	Email blasts	Distribution lists of local councils, community groups, sporting groups, health consumer agencies, primary health networks, regional development boards, industry groups and universities in regional SA
Community engagement	Public lectures	All University of South Australia Department of Rural Health major training sites; community groups
	Stakeholder group meetings	Country SA primary health network regional committees; local councils
	Community / public events	Community fairs; Conferences; Exhibitions; Shopping centre displays

SA: South Australia

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3 **Planned analysis:** Data from hard-copy surveys will be directly entered into the online survey by 4 the research team. On completion of the project, data will be exported from the SurveyMonkey 5 platform into SPSS (v.24) for data cleaning and statistical analysis. Missing data will be prevented 6 by enacting forced survey responses. Multiple responses from single participants will be managed 7 using the de-duplication procedure for online surveys described by Konstan et al [39]. In brief, all 8 responses will be screened for duplicate internet service provider (ISP) entries (including the first 9 three quadrants of an ISP address). Any duplicate ISP entries that report matching demographic

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data (i.e. age, sex, highest education and marital status) will be considered a duplicate response and subsequently excluded from the analysis (with only the first dated entry retained). Categorical data will be descriptively analysed using frequency distributions and percentages. Measures of central tendency and variability will be used for continuous data where values are normally distributed, whereas medians and the interquartile range will be used to describe data that is not normally distributed. Differences between groups will be assessed using independent samples t-tests or Mann–Whitney U test (for continuous variables), chi-square test (for categorical variables), and ANOVA or Kruskal-Wallis (where there are more than two groups). Independent predictors of health service utilisation (i.e. frequency of visits to health providers), expectations (i.e. health care attitude score) and experiences (i.e. health care experience score) will be identified using regression analysis. The representativeness of the sample to the base population will be cross-checked against regional South Australia demographic data derived from the 2016 Australian population census. To mitigate the self-selection bias, the survey sample distribution will be adjusted by applying weights to the age, sex and location distribution of the regional South Australian population; these weights will be based on 2016 Australian population census data. Ethics: The study has been reviewed and approved by the Human Research Ethics Committee of the University of South Australia, and will be conducted in accordance with the National Health & Medical Research Council (NHMRC) national statement on ethical conduct in research, as well as the approved study protocol. A detailed participant information sheet will preface each survey, with voluntary completion of the survey implying informed consent to participate. No personally identifiable information will be collected in order to maintain the anonymity of the survey. DISCUSSION

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Health inequalities and inadequate health service provision are major concerns facing regional Australia. In fact, living in regional locations of Australia is associated with poorer health outcomes, increased chronic disease mortality and lower life expectancy when compared with living in metropolitan locations [40-43]. An important first step in addressing these health status disparities is understanding the health care needs of the regional population. The RESONATE survey will explore these needs in detail, as well as gain new insights into the health care expectations and experiences of people living in regional South Australia.

In addition to shedding new light on the health care needs of regional South Australians, the findings of this research will make an important contribution to future health services planning. Using the needs-based health workforce planning framework, the health care needs of this population can be mapped against best practice care to estimate total health workforce requirements [44]. This model has already been applied to regional populations with diabetes [45] and mental illness [46], and takes a far more "richer perspective on population needs" than other workforce planning approaches [44]. Given the considerable health workforce maldistribution in regional South Australia [47-49], this is an important next step for this research.

If the RESONATE study can reach, or even exceed its target of 1,832 participants, it will represent the largest health survey conducted in regional South Australia. Importantly, the study will complement the results of other large studies of regional South Australians, including the Australian Bureau of Statistics National Health Survey (estimated n=818) [30] and the National Regional Wellbeing Survey (n=1,126) [50], by reporting unique insights into the regional South Australian population not yet available. Further, the large sample will enable meaningful subgroup analyses to be performed to better inform local policy and strategy (e.g. comparing needs between regions and statistical areas) [51]. The latter is a particularly important point, as the

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project is underpinned by a community-based participatory approach, whereby local communities will be actively involved in project promotion and implementation, as well as the dissemination and translation of research findings; this will ensure the research informs and facilitates meaningful change at the local level [52].

6 Despite its strengths, the RESONATE study does have a limitation - its susceptibility to self-7 selection bias. Whilst it is not possible to eliminate this bias entirely due to the use of non-8 probability (self-selection) sampling, the study has put in place multiple measures to help mitigate 9 this risk and the risk of other biases. These strategies include the implementation of a 10 comprehensive multi-modal recruitment campaign with extensive reach to the regional SA 11 population (to minimise undercoverage bias); intensive community engagement (to maximise 12 widespread community participation and reduce sampling bias); the provision of alternative 13 survey administration methods (to mitigate recruitment bias); the use of an instrument with 14 acceptable psychometric properties (to reduce measurement error), and the weighting of sample 15 data (to adjust for an unrepresentative sample) [53].

16

17 CONCLUSION

18 RESONATE will represent the largest health survey ever conducted in regional South Australia. The 19 study will further our understanding of the state of health of regional South Australia, and will 20 impart new insights into the health service experiences, utilization and expectations of this 21 population. Accordingly, the findings of this research will help us to better understand the health 22 care needs of regional South Australians. An important next step of this research will be to map 23 these needs against existing health workforce supply to enable policy makers, health care 24 providers, researchers and educationalists to identify the health workforce required to better 25 support the health of regional South Australians.

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1 2	ABBREVIATIONS
3	ANOVA: Analysis of variance
4	CONVERSATIONS: Consumer utilisation, expectations and experiences of health care instrument
5	IQR: Interquartile range
6	RESONATE: Regional South Australia Health
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8	DECLARATIONS
9	Ethics approval and consent to participate
10	The study was approved by the Human Research Ethics Committee of the University of South
11	Australia [Protocol ID: 0000034611]. Participants will be informed about the study via the survey
12	cover sheet and project website. Informed consent will be implied through completion of the
13	survey.
14	
15	Consent for publication Not applicable.
16	Not applicable.
17	
18	Availability of data
19	Datasets used and/or analysed during the current study will be available from the corresponding
20	author on reasonable request.
21	
22	Competing interests
23	The authors declare that they have no competing interests.
24	
25	Funding

1 2	1	Not applicable.
3 4 5	2	
6 7	3	Authors' contributions
8 9	4	ML conceptualised the project and drafted the manuscript. MJ, MG and EM reviewed and edited
10 11 12	5	the manuscript. All authors read and approved the final manuscript.
12 13 14	6	
15 16	7	Acknowledgements
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20 21	9	University of South Australia.
22	10	
23	11	REFERENCES
24		
25	12	1. The World Bank. World bank open data. 2017. <u>http://data.worldbank.org/</u> . Accessed 10
26		
27	13	Aug 2017.
28		
29	14	2 Australian Burgan of Statistics Bagianal Danulation Crowth Australia 2016 Cat. No.
30	14	2. Australian Bureau of Statistics. Regional Population Growth, Australia, 2016. Cat. No.
31		
	15	3218.0. Canberra, Australia: Australian Bureau of Statistics; 2017.
32		
33	16	2 Australian Duranu of Statistics ADS Stat. Conherra Australian Australian Duranu of
34	16	3. Australian Bureau of Statistics. ABS.Stat. Canberra, Australia: Australian Bureau of
35		
36	17	Statistics; 2017.
37		
38	18	4. Organisation for Economic Co-operation & Development (OECD). OECD health policy
39	10	4. Organisation for Economic Co-operation & Development (OECD). OECD health policy
40		
41	19	overview: health policy in Australia. Paris, France: OECD; 2015.
42		
43	20	5. Ahern T, Gardner A, Courtney M. Exploring patient support by breast care nurses and
44	20	s. Allerin i, duraller A, dourthey M. Exploring patient support by bleast care huises and
45		
46	21	geographical residence as moderators of the unmet needs and self-efficacy of Australian
47	22	women with breast cancer: Results from a cross-sectional, nationwide survey. Eur J Oncol
48		······································
49 50	22	Num 2016-22-72 80
50	23	Nurs. 2016;23:72-80.
51		
52	24	6. Colman E, Missinne S, Bracke P. The Role of Perceived Helpfulness in Predicting Subjective
53		
54	25	Unmet Need and the Frequency of Health Care Use. Arch Psych Nurs. 2014;28:43-49.
55	23	oninet weed and the frequency of freath care ose. Arch i sych Muis, 2014,20.45-45.
56		
57		
58		
59		17
60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

BMJ Open: first published as 10.1136/bmjopen-2017-019784 on 13 April 2018. Downloaded from http://bmjopen.bmj.com/ on June 13, 2025 at Agence Bibliographique de I Enseignement Superieur (ABES) . Protected by copyright, including for uses related to text and data mining, Al training, and similar technologies.

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#### BMJ Open

1 2	1	7. Dezetter A, Duhoux A, Menear M, Roberge P, Chartrand E, Fournier L. Reasons and
3 4 5	2	Determinants for Perceiving Unmet Needs for Mental Health in Primary Care in Quebec.
6 7	3	Can J Psychiatr. 2015;60:284-293.
8 9	4	8. Ghuman SJ, Brackbill RM, Stellman SD, Farfel MR, Cone JE. Unmet mental health care need
10 11 12	5	10-11 years after 9/11 terrorist attacks: 2011-2012 results from the World Trade Center
12 13 14	6	Health Registry. BMC Public Health. 2014;14:491-499.
15 16	7	9. Ou L, Chen J, Hillman K. Socio-demographic disparities in the utilisation of general practice
17 18 10	8	services for Australian children - Results from a nationally representative longitudinal
19 20 21	9	study. PLOS One. 2017;12:e0176563.
22 23	10	10. Pappa E, Kontodimopoulos N, Papadopoulos A, Tountas Y, Niakas D. Investigating Unmet
24 25	11	Health Needs in Primary Health Care Services in a Representative Sample of the Greek
26 27 28	12	Population. Int J Environ Res Public Health. 2013;10:2017–2027.
29 30	13	11. Ronksley PE, Sanmartin C, Campbell DJT, Weaver RG, Allan M, McBrien KA, et al. Perceived
31 32	14	barriers to primary care among western Canadians with chronic conditions. Stat Can.
33 34 25	15	2014;25:3-10.
35 36 37	16	12. Andrade LH, Alonso J, Mneimneh Z, Wells JE, Al-Hamzawi G, Borges E, et al. Barriers to
38 39	17	mental health treatment: results from the WHO World Mental Health surveys. Psychol
40 41	18	Med. 2014;44:1303-17.
42 43 44	19	13. Allen H, Wright B J, Harding K, Broffman L. The Role of Stigma in Access to Health Care for
45 46	20	the Poor. Milbank Q. 2014;92:289-318.
47 48	21	14. Monger M. Stigma: barrier to quality of life and health care. HIV Clinician. 2011;23:1,4-5.
49 50 51	22	15. Sheikh-Mohammed M, MacIntyre CR, Wood NJ, Leask J, Isaacs D. Barriers to access to
52 53	23	health care for newly resettled sub-Saharan refugees in Australia. Med J Aust.
54 55	24	2006;185:594-597.
56 57		
58 59		18

1 2	1	16. Hull M, Fennell KM, Vallury K, Jones M, Dollman J. A comparison of barriers to mental
3 4 5	2	health support-seeking among farming and non-farming adults in rural South Australia.
5 6 7	3	Aust J Rural Health. 2017; Epub ahead of print.
8 9	4	17. Stewart H, Jameson JP, Curtin L. The relationship between stigma and self-reported
10 11	5	willingness to use mental health services among rural and urban older adults. Psychol Serv.
12 13 14	6	2015;12:141-148.
14 15 16	7	18. Syed ST, Gerber BS, Sharp LK. Traveling towards disease: transportation barriers to health
17 18	8	care access. J Community Health. 2013;38:976-993.
19 20	9	19. Andersen R, Newman JF. Societal and individual determinants of medical care utilization in
21 22 23	10	the United States. Milbank Q. 2005;83:1-28.
23 24 25	11	20. Babitsch B, Gohl D, von Lengerke T. Re-revisiting Andersen's Behavioral Model of Health
26 27	12	Services Use: a systematic review of studies from 1998–2011. Psychosoc Med.
28 29	13	2012;9:Doc11.
30 31 32	14	21. Bindman AB, Grumbach K, Osmond D, Komaromy M, Vranizan K, Lurie N, et al. Preventable
33 34	15	hospitalizations and access to health care. J Am Med Assoc. 1995;274:305–311.
35 36	16	22. McCusker J, Roberge D, Lévesque JF, Ciampi A, Vadeboncoeur A, Larouche D, et al.
37 38 39	17	Emergency department visits and primary care among adults with chronic conditions. Med
39 40 41	18	Care. 2010; 48: 972–980.
42 43	19	23. Zuckerman S, Shen YC. Characteristics of occasional and frequent emergency department
44 45	20	users: Do insurance coverage and access to care matter. Med Care. 2004;42:176–182.
46 47 48	21	24. Ronksley PE, Sanmartin C, Quan H, Ravani P, Tonelli M, Manns B, et al. Association
40 49 50	22	between perceived unmet health care needs and risk of adverse health outcomes among
51 52	23	patients with chronic medical conditions. Open Med. 2013;7:e21-30.
53 54	24	25. Ayanian JZ, Weissman JS, Schneider EC, Ginsburg JA, Zaslavsky AM. Unmet Health Needs of
55 56 57	25	Uninsured Adults in the United States. JAMA. 2000;284:2061-2069.
57 58 59	-	19
60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1 2	1	26. Hansen DG, Larsen PV, Holm LV, Rottmann N, Bergholdt SH, Søndergaard J. Association
3 4	2	between unmet needs and quality of life of cancer patients: A population-based study.
5 6 7	3	Acta Oncol. 2013;52:391-399.
, 8 9	4	27. Slade M, Leese M, Cahill S, Thornicroft G, Kuipers E. Patient-rated mental health needs and
10 11	5	quality of life improvement. Br J Psychiatry. 2005;187:256-261.
12 13 14	6	28. Smith AW, Parsons HM, Kent EE, Bellizzi K, Zebrack BJ, Keel G, et al. Unmet support service
14 15 16	7	needs and health-related quality of life among adolescents and young adults with cancer:
17 18	8	the AYA HOPE study. Front Oncol. 2013;3:75.
19 20	9	29. Australian Bureau of Statistics. National Health Survey: First Results, 2014-15. Cat. No.
21 22	10	4364.0.55.001. Canberra: Australian Bureau of Statistics; 2015.
23 24 25	11	30. Falci L, Shi Z, Greenlee H. Multiple Chronic Conditions and Use of Complementary and
26 27	12	Alternative Medicine Among US Adults: Results From the 2012 National Health Interview
28 29	13	Survey. Prev Chronic Dis. 2016;13:150501.
30 31	14	31. Busato A, Donges A, Herren S, Widmer M, Marian F. Health status and health care
32 33		
34 35	15	utilisation of patients in complementary and conventional primary care in Switzerland - an
36 37	16	observational study. Fam Prac. 2006;23:116-124.
38 39	17	32. Chao M, Wade C, Kronenberg F, Kalmuss D, Cushman L. Women's reasons for
40 41	18	complementary and alternative medicine use: Racial/ethnic differences. J Altern
42 43 44	19	Complement Med. 2006;12:719-720.
44 45 46	20	33. Simoes-Wust A, Rist L, Dettling M. Self-reported health characteristics and medication
47 48	21	consumption by cam users and nonusers: A swiss cross-sectional survey. J Altern
49 50	22	Complement Med. 2014;20:40-47.
51 52	23	34. Sirois FM. Motivations for consulting complementary and alternative medicine
53 54 55	24	practitioners: A comparison of consumers from 1997–8 and 2005. BMC Complement Altern
55 56 57	25	Med. 2008;8:16.
58		20
59 60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

1 2	1	35. Women's Health Australia. Australian Longitudinal Study on Women's Health: Surveys.
3 4 5	2	2015. http://www.alswh.org.au/for-researchers/surveys#. Accessed 23 Jul 2015.
5 6 7	3	36. Polit D, Hungler B. Nursing Research: Principles and Methods (seventh edition).
8 9	4	Philadelphia, USA: Lippincott; 2004.
10 11	5	37. Davis L. Instrument review: Getting the most from a panel of experts. App Nurs Res.
12 13	6	1992;5:194-197.
14 15 16	7	38. Koo TK, Li MY. A guideline of selecting and reporting intraclass correlation coefficients for
17 18	8	reliability research. J Chiropr Med. 2016;15:155-163.
19 20	9	39. Konstan JA, Rosser BRS, Ross MW, Stanton J, Edwards WM. The story of subject naught: a
21		33. Konstan 3A, Kosser Bits, Koss WW, Stanton 3, Lawards WW. The story of subject haught. a
22 23	10	cautionary but optimistic tale of Internet survey research. J Comput Mediat Commun.
24 25 26	11	2005;10:11.
26 27 28	12	40. Australian Institute of Health and Welfare (AIHW). Rural, regional and remote health -
29 30	13	indicators of health system performance. Rural Health Series no. 10, cat. No. PHE103.
31 32	14	AIHW: Canberra, Australia; 2008.
33 34	15	41. Beckmann KR, Bennett A, Young GP, Cole SR, Joshi R, Adams J, et al. Sociodemographic
35 36 37	16	disparities in survival from colorectal cancer in South Australia: a population-wide data
37 38 39	17	linkage study. BMC Health Serv Res. 2016;16:24.
40	10	
41 42	18	42. Chondur R, Li SQ, Lawton P. Does relative remoteness affect chronic disease outcomes?
42 43 44	19	Geographic variation in chronic disease mortality in Australia, 2002–2006. Aust NZ J Public
45 46	20	Health. 2013;38:117-121.
47 48	21	43. Fox P, Boyce A. Cancer health inequality persists in regional and remote Australia. Med J
49 50	22	Aust. 2014;201:445-446.
51 52 53	23	44. Segal L, Leach MJ. An evidence-based health workforce model for primary and community
53 54 55	24	care. Implement Sci. 2011;6:93.
56		
57 58		
59		21
60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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1 2	1	45. Segal L, Leach MJ, May E, Turnbull C. Regional primary care team to deliver best-practice
3 4 5	2	diabetes care: a needs-driven health workforce model reflecting a biopsychosocial
6 7	3	construct of health. Diab Care. 2013;36:1898-1907.
8 9	4	46. Furber G, Segal L, Leach M, Turnbull C, Procter N, Diamond M, et al. Preventing mental
10 11 12	5	illness: closing the evidence-practice gap through workforce and services planning. BMC
13 14	6	Health Serv Res. 2015;15:283.
15 16	7	47. Department of Health. The national health workforce dataset (NHWDS): Physiotherapy
17 18 19	8	2015. Canberra, Australia: Department of Health; 2015.
20 21	9	48. Department of Health. Nurses and midwives 2016 fact sheet. Canberra, Australia:
22 23	10	Department of Health; 2017.
24 25 26	11	49. Tennant M, Kruger E, Shiyha J. Dentist-to-population and practice-to-population ratios: in a
20 27 28	12	shortage environment with gross mal-distribution what should rural and remote
29 30	13	communities focus their attention on? Rural Remote Health. 2013;13:2518.
31 32 33	14	50. Centre for Research and Action in Public Health. 2015 regional wellbeing survey data
33 34 35	15	tables: South Australia - natural resource management regions. University of Canberra:
36 37	16	Canberra, Australia; 2016.
38 39 40	17	51. De Vaus D. Surveys in social research (sixth edition). Oxon, UK: Routledge; 2014.
40 41 42	18	52. Hacker K. Community-based participatory research. Thousand Oaks, USA: Sage; 2013.
43 44	19	53. Keeble C, Law GR, Barber S, Baxter PD. Choosing a method to reduce selection bias: a tool
45 46 47	20	for researchers. Open J Epidemiol. 2015;5:155-162.
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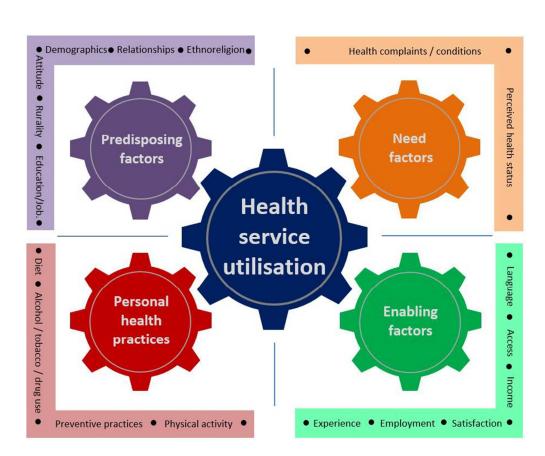
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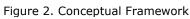
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2 3	1 2	FIGURES
4	3	Figure 1. RESONATE flow chart
6	4 5	Figure 2. Conceptual framework of the CONVERSATIONS
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## STROBE 2007 (v4) Statement—Checklist of items that should be included in reports of cross-sectional studies

Section/Topic	ltem #	Recommendation	Reported on page #	
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1	
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	NA	
Introduction				
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3-5	
Objectives	3	State specific objectives, including any prespecified hypotheses	5-6	
Methods				
Study design	4	Present key elements of study design early in the paper	5	
Setting			6, 10-11	
Participants	6	a) Give the eligibility criteria, and the sources and methods of selection of participants		
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable		
Data sources/       8*       For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe         measurement       comparability of assessment methods if there is more than one group		9-10		
Bias	9	Describe any efforts to address potential sources of bias	13-14	
Study size	10	Explain how the study size was arrived at	6	
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	NA	
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	11-12	
		(b) Describe any methods used to examine subgroups and interactions	11-12	
		(c) Explain how missing data were addressed	11	
		(d) If applicable, describe analytical methods taking account of sampling strategy	12	
		(e) Describe any sensitivity analyses	NA	
Results				

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14*	confirmed eligible, included in the study, completing follow-up, and analysed       (b) Give reasons for non-participation at each stage         (c) Consider use of a flow diagram       (a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential	NA NA
14*	(c) Consider use of a flow diagram	
14*		NA
14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential	
		NA
	confounders	
	(b) Indicate number of participants with missing data for each variable of interest	NA
15*	Report numbers of outcome events or summary measures	NA
16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence	NA
	interval). Make clear which confounders were adjusted for and why they were included	
	(b) Report category boundaries when continuous variables were categorized	NA
	(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses 17 Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses		NA
18	Summarise key results with reference to study objectives	NA
19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	13-14
Interpretation 20 Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence		NA
21	Discuss the generalisability (external validity) of the study results	NA
22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on	15
	16 17 18 19 20 21	15*       Report numbers of outcome events or summary measures       Image: construction of the study of the study results         16       (a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included         (b) Report category boundaries when continuous variables were categorized       Image: consider translating estimates of relative risk into absolute risk for a meaningful time period         17       Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses         18       Summarise key results with reference to study objectives         19       Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias         20       Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence         21       Discuss the generalisability (external validity) of the study results

\*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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# The Regional South Australia Health Survey [RESONATE]: Study protocol

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Keywords:	PUBLIC HEALTH, PRIMARY CARE, EPIDEMIOLOGY, STATISTICS & RESEARCH METHODS



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#### The Regional South Australia Health Survey [RESONATE]: Study protocol

#### ABSTRACT

Introduction: Access to quality health care services is considered a moral right. However, for people living in regional locations, timely access to the services that they need may not always be possible because of structural and attitudinal barriers. This suggests that people living in regional areas may have unmet health care needs. The aim of this research will be to examine the health care needs, expectations and experiences of regional South Australians.

Methods and Analysis: The Regional South Australia Health (RESONATE) survey is a cross-sectional study of adult health consumers living in any private or non-private dwelling, in any regional, rural, remote or very remote area of South Australia, and with an understanding of written English. Data will be collected using a 45-item, multi-dimensional, self-administered instrument, designed to measure health care need, barriers to health care access, and health service utilisation, attitudes, experiences and satisfaction. The instrument has demonstrated acceptable psychometric properties, including good content validity and internal reliability, good test-retest reliability, and a high level of acceptability. The survey will be administered online and in hard-copy, with at least 1,832 survey participants to be recruited over a twelve-month period, using a comprehensive, multi-modal recruitment campaign.

Ethics and dissemination: The study has been reviewed and approved by the Human Research Ethics Committee of the University of South Australia. The results will be actively disseminated through peer-reviewed journals, conference presentations, social media, broadcast media, print media, the internet, and various community/stakeholder engagement activities.

Key words: experience; expectation; health; protocol; needs; regional; rural; survey.

1	
2	Strengths and limitations of this study
3	• This study will represent the largest survey ever conducted to examine the health care needs
4	expectations and experiences of regional South Australians.
5	• The use of non-probability sampling, whilst economically and logistically advantageous, will
6	elevate the risk of self-selection bias.
7	• Multiple strategies will be put in place to mitigate the risk of sampling, undercoverage,
8	recruitment and participation bias, as well as measurement error.
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10	
11	BACKGROUND
12	Almost 46% of the world's population live in regional, rural, remote or very remote area
13	(hereafter referred to as regional); these regions are often characterised by much lowe
14	population densities (i.e. global mean of 30.3 people per square kilometre) relative to urban area
15	(i.e. global mean of 1109.6 people per square kilometre) [1]. In Australia, close to 33% of th
16	nation's population live in regional areas, with an estimated population density as low as 10.3
17	people per square kilometre [2,3]. The wide dispersion of the regional Australian population
18	creates a number of challenges for health care delivery; for instance, timely access to the service
19	that regional Australians need may not always be possible. The complexity of the Australian healt
20	care system (i.e. the complex split of funding and responsibility across Federal, State and Territor
21	governments, and across public and private sectors) amplifies the problem by creating addition
22	challenges to the coordination, integration and continuity of health care services, especially for
23	people living with chronic, co-morbid conditions and in regional locations [4].
24	
25	In Australia, and internationally, there is a mounting body of evidence supporting the view the
26	conventional health care services are struggling to meet the health care needs of consumer

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particularly those with chronic health conditions and those living in regional areas [5-11]. The literature identifies some reasons why health consumer's needs are perhaps not being met. These barriers and enablers of healthcare utilisation can be broadly represented under two themes: structural factors (i.e. accessibility, cost, time/availability, convenience), and attitude (i.e. not needing medical support, stigma, improving symptoms, poor relationship with healthcare provider) [11-15]. For regional communities, these factors can be prominent obstacles to health care access [16-18].

Andersen and Newman [19] take a less simplistic view of health service use by viewing these determinants through a behavioural lens. Their construct, the Anderson Behavioural Model of health service use, identifies four key drivers of health care utilisation: predisposing factors (i.e. prevailing conditions that predispose an individual to use a health service), enabling factors (i.e. circumstances that either facilitate or hinder health service use), need factors (i.e. actual or perceived need for health services) and personal health practices (i.e. behaviours that influence health status). While many studies have used the Anderson Behavioural Model to investigate the use of health services, the range of variables reported to date has been limited and highly variable [20]. There is also a need to better understand how these determinants of health care utilisation differ across populations (e.g. between regional areas); the study described herein aims to address these knowledge gaps.

The impact of unmet health care need (i.e. the difference between services required and services received) [10] at a systems level is not entirely clear. Several studies indicate that perceived unmet health care need is associated with higher rates of hospital admission, longer lengths of stay, and more frequent visits to emergency departments [21-23]; however, the evidence is not consistent [24]. Other studies suggest that those expressing an unmet health need access health care

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services less frequently [6]; this could have potential implications for consumer morbidity and 1 2 mortality due to deficits in disease screening, monitoring, maintenance and risk reduction [25]. 3

4 At the individual level, the impact of unmet health care need can be substantial. Findings from 5 several studies support an association between unmet health need and poorer quality of life [26-6 28], worse mental health [28] and psychological distress [26]. Although the direction of this 7 association has yet to be determined, it does suggest that many health care systems have failed to 8 some degree in meeting health consumer needs.

The significant implications of unmet consumer need signify the importance of furthering our 10 11 understanding of the needs of health consumers; this is particularly evident in regional 12 populations where there are considerable barriers to health care access, as well as a large health 13 workforce maldistribution; as is the case in regional Australia. A more detailed exploration of the 14 determinants of health service utilisation at a State/Territory level may help to discern these 15 needs. A population of particular importance is regional South Australia, which has one of the 16 highest rates of chronic disease, co-morbidity, psychological distress, and fair/poor self-assessed 17 health status of any State or Territory of Australia [29]. In addressing the abovementioned points, 18 the proposed project will be the first known study to explore regional South Australian 19 expectations and experiences in using diverse conventional and complementary health care 20 services, with a view to better understanding the health care needs of this population.

21 22 **METHODS** 

23 Study Design: The Regional South Australia Health (RESONATE) survey employs a cross-sectional 24 study design. An overview of the study procedures, from questionnaire development through to 25 the reporting of survey findings, is illustrated in Figure 1.

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1	Aim	and objectives: RESONATE aims to examine the health care needs, expectations and
2	expe	eriences of regional South Australians. The objectives of the study will be to:
3	1.	Determine the 12-month/lifetime prevalence of health conditions (i.e. diagnosed or treated
4		by a health professional), surgical procedures, and multi-morbidity (measured using the
5		multiple chronic condition index [30]) among persons living in regional South Australia.
6	2.	Examine the extent to which health services / treatments were used (i.e. frequency of use in
7		the previous twelve months) by persons living in regional South Australia.
8	3.	Identify the information resources (e.g. internet, friend, health provider) used in the previous
9		twelve months to inform a person's decision to use a health service / treatment in regional
10		South Australia.
11	4.	Identify the extent (using a 4-point frequency scale) to which structural (e.g. cost, distance)
12		and attitudinal (e.g. stigma) barriers prevent persons from accessing health services /
13		treatments in regional South Australia.
14	5.	Ascertain the experiences (i.e. lifetime prevalence of adverse events, miscommunication,
15		misunderstanding and disrespect, using a 4-point frequency scale) of persons living in
16		regional South Australia with various health services / treatments.
17	6.	Determine the attitudes of persons living in regional South Australia toward various health
18		services / treatments (i.e. perceptions of the roles, values, accessibility and quality of a heath
19		care service, using a 5-point Likert scale).
20	7.	Determine the degree (using a 5-point Likert scale) to which persons living in regional South
21		Australia are satisfied with the quality of health services / treatments they have received.
22	8.	Identify the determinants of health service utilisation, expectations and experiences among
23		persons living in regional South Australia.
24		

Sample & Setting: The study will use non-probability (self-selection) sampling for economic and logistical reasons. The sample will comprise adult health consumers (i.e. a person over the age of 18 years who has used a health care service or received any health intervention within the last twelve months) living in any private or non-private dwelling, in any regional, rural, remote or very remote area of South Australia (a region that covers 99.7% of the land area of the state [3]). Participants also must be able to read and understand written English, comprehend the information provided, and have either a fixed address (for delivery of the hard-copy version of the survey) or access to the internet (to access the online version of the survey). Excluded will be people with severe cognitive impairment, severe vision impairment, and those not able to provide consent. Based on a target population of 290,290 adults, the study will need to survey at least 1,832 persons; this is based on a  $\pm$  3% margin of error at the 99% confidence level.

13 Questionnaire: The consumer utilisation, expectations and experiences of health care instrument 14 (CONVERSATIONS) is a multidimensional, self-administered questionnaire designed to measure 15 health service utilisation, needs, expectations and experiences. The development, validation and 16 description of the instrument are detailed below.

Development: Development of the questionnaire was an iterative process that began with an extensive search of the health motivation literature, the interrogation of pertinent surveys [30-35], and informal consultation with clinicians, researchers and consumers. This generated a large pool of potential survey items. Using the Andersen behavioural model of health service use [19] as the conceptual framework for the survey, potential questions were placed into one of four categories: predisposing factors, enabling factors, need factors and personal health practices (see Figure 2). The research team reviewed the items under each category to ensure questions adequately captured the construct of the framework (i.e. to

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confirm face validity), questions were clear in their meaning, response items were comprehensive, and any duplicate/overlapping items were removed. The list of items, comprising a combination of open questions (i.e. free text boxes) and closed questions (i.e. Likert scales, dichotomous items and nominal items), were then re-ordered to improve the flow of the survey, to simplify data analysis, and to be more meaningful to respondents.

Validation: The preliminary 51-item CONVERSATIONS underwent a two-stage psychometric evaluation. The first stage recruited a purposive sample of 9 international academics with expertise in survey design and/or health service utilisation, as well as a track record in regional health research, to assess the content validity of the survey. Academics were identified through online staff directories of major Australian and international Universities. The sample comprised 3 academics from Australia, 2 from the US, and 1 each from Spain, New Zealand, the UK and Israel, of whom 5/9 were female. Using the method described by Polit and Hungler [36], respondents indicated the relevance of each survey item by assigning one of four responses to each item: (1) question is relevant, (2) question is relevant but needs minor alteration, (3) question is relevant but needs major alteration, and (4) question is not relevant to the survey construct (i.e. health service need). The mean percentage of items with a score of 3 or 4 was calculated (i.e. agreement of relevancy) for each subsection of the survey, and for the survey overall, with good content validity defined as a level of agreement of 80% or above [36,37]. After the removal of seven irrelevant questions, the CONVERSATIONS survey was shown to have good scale-level content validity (mean 85.3% ± SD 13.1%), and good subscale-level content validity (Part A 84.1%  $\pm$  17.9%; Part B 86.7%  $\pm$ 8.6%; Part C 81.8% ± 12.1%; Part D 88.8% ± 9.6%; Part E 88.5% ± 0.9%). Of the retained questions, 16 items underwent minor editorial changes based on expert feedback.

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In the second stage of evaluation, a purposive sample of 16 health consumers, of various age groups, and diverse cultural, educational and socio-economic backgrounds (including one-third with lived experience in regional Australia), were invited to complete the CONVERSATIONS, on two separate occasions, two-weeks apart. The purposive sample was identified through the research team's social network, and comprised 11 females and 5 males, aged between 21 and 66 years (mean age 42.9 ± 10.2 years), of whom 12 resided in Australia, 3 in the UK and 1 in Singapore. Data from the baseline survey were used to assess the acceptability (i.e. frequency of missing data, completion time) and internal consistency (i.e. Cronbach's alpha) of the instrument. The baseline and week two data were used to measure test-retest reliability (using the intraclass correlation coefficient [absolute agreement, two-way mixed-effects model] for scale and ordinal data, and Cohen's Kappa for nominal data).

The analysis revealed a median completion time of 20 (IQR 15,30) minutes, and a high level of acceptability, with 15/16 (93.8%) participants submitting a fully-completed survey at baseline. The 6-item experience subscale and 16-item attitude subscale of the instrument demonstrated good to excellent internal reliability [36], with values reported as follows: experience of conventional treatments (a component of Part C:  $\alpha$ =0.92); experience of CAM treatments (a component of Part D:  $\alpha$ =0.88); attitude toward conventional treatments (a component of Part C:  $\alpha$ =0.90); and attitude toward CAM treatments (a component of Part D:  $\alpha$ =0.88). There was also good to excellent agreement between baseline and week-2 scores for three out of five parts of the instrument (Mean reliability coefficients: Part A 0.962, 95% CI 0.950, 0.973; Part B 0.827, 95% CI 0.738, 0.917; Part C 0.768, 95% CI 0.701, 0.834), and moderate agreement between scores for two parts (Mean reliability coefficients: Part D 0.699, 95% CI 0.603, 0.795; Part E 0.741, 95% CI 0.408, 1.000). Overall, the CONVERSATIONS 

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demonstrated good test-retest reliability (Overall mean reliability coefficient: 0.799, 95% Cl 0.749, 0.849) [38].

Given the multi-dimensionality and multi-disciplinary nature of the survey, as well as the self-administered design, there was no similar instrument for which the CONVERSATIONS could be compared against; as such, it was not possible to measure convergent validity.

Description: The final instrument was a 44-item questionnaire divided into five sections: (i) demographic characteristics [Part A; 16 items, including age, sex, level of education, marital status, caregiver status, religion, English language proficiency, health literacy, country of birth, number of dependent children, regional classification, employment status, occupation, annual household income, current postcode, years lived in postcode], (ii) health status and lifestyle [Part B; 10 items, including overall health rating, diagnosed health conditions, surgical history, sedentary duration, dietary intake, level of physical activity, alcohol consumption, smoking status, illicit drug use, health screening activity], (iii) use of conventional / mainstream health services [Part C; 8 items, including 12-month / lifetime use of conventional health services, frequency of visits to conventional health providers, satisfaction with the quality of care received by conventional health providers, utilisation of conventional health treatments / services, information resources impacting the decision to use conventional health care services, experience with using conventional health services, barriers to accessing conventional health services, attitude toward conventional health services], (iv) use of complementary / alternative / natural health and self-prescribed services [Part D; 9 items, including 12-month / lifetime use of complementary health services, frequency of visits to complementary health providers, satisfaction with the quality of care received by complementary health providers, utilisation of complementary and self-

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prescribed health treatments / services, information resources impacting the decision to use complementary health care services, experience with using complementary health services, barriers to accessing complementary health services, attitude toward complementary health services], and (v) other [Part E; 1 item, measuring preferred mix of health services]. A hard-copy version and online version (using the SurveyMonkey<sup>™</sup> platform) of the CONVERSATIONS have been generated for this study. *Recruitment/procedures*: The project will implement a comprehensive, multi-modal recruitment campaign, and in accordance with a community-based participatory approach, will involve extensive community engagement. The strategies that will be employed are outlined in Table 1. The majority of these strategies will direct participants to the project website, which will contain further information about the study, the participant information sheet, a web enquiry form, and a link to the online survey. Participants who cannot (or prefer not to) complete the survey online will be advised to contact the research department, using the toll-free telephone number provided, to have the participant information sheet, survey and reply-paid envelope posted out to them. To facilitate recruitment, all participants who opt in will be entered into a draw to win one of 20 x \$50 gift cards. Recruitment for the survey will take place between April 2017 and March 2018.

#### 20 Table 1: Recruitment strategies for the RESONATE survey

Category	Strategy	Platform / agency / medium
Social media	Social media advertising	Facebook Ads (targeting a regional SA audience)
	Social media posts (i.e. study information / invitations)	Facebook pages, LinkedIn, Twitter
Broadcast media	Region-specific media releases	All television and radio stations in regional SA
	Television classified advertising	All television stations in regional SA
Print media	Region-specific media releases	All newspapers in regional SA

	Letterbox drops (i.e. study postcards)	All households, businesses and post-office boxes in regional SA
	Study flyers	All local councils, public libraries and community agencies in regional SA
	Newsletter articles	All local councils, community groups, sporting groups, primary health networks and industry groups in regional SA
Online media	Project website	Dedicated project website with exclusive web address
	Email blasts	Distribution lists of local councils, community groups, sporting groups, health consumer agencies, primary health networks, regional development boards, industry groups and universities in regional SA
Community engagement	Public lectures	All University of South Australia Department of Rural Health major training sites; community groups
	Stakeholder group meetings	Country SA primary health network regional committees; local councils
	Community / public events	Community fairs; Conferences; Exhibitions; Shopping centre displays

SA: South Australia

> Planned analysis: Data from hard-copy surveys will be directly entered into the online survey by the research team. On completion of the project, data will be exported from the SurveyMonkey platform into SPSS (v.24) for data cleaning and statistical analysis. Missing data will be prevented by enacting forced survey responses. Multiple responses from single participants will be managed using the de-duplication procedure for online surveys described by Konstan et al [39]. In brief, all responses will be screened for duplicate internet service provider (ISP) entries (including the first three quadrants of an ISP address). Any duplicate ISP entries that report matching demographic data (i.e. age, sex, highest education and marital status) will be considered a duplicate response and subsequently excluded from the analysis (with only the first dated entry retained). Categorical data will be descriptively analysed using frequency distributions and percentages. Measures of central tendency and variability will be used for continuous data where values are normally

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distributed, whereas medians and the interquartile range will be used to describe data that is not normally distributed. Differences between groups will be assessed using independent samples t-tests or Mann–Whitney U test (for continuous variables), chi-square test (for categorical variables), and ANOVA or Kruskal-Wallis (where there are more than two groups). Independent predictors of health service utilisation (i.e. frequency of visits to health providers), expectations (i.e. health care attitude score) and experiences (i.e. health care experience score) will be identified using regression analysis. The representativeness of the sample to the base population will be cross-checked against regional South Australia demographic data derived from the 2016 Australian population census. To mitigate the self-selection bias, the survey sample distribution will be adjusted by applying weights to the age, sex and location distribution of the regional South Australian population; these weights will be based on 2016 Australian population census data. DISCUSSION Health inequalities and inadequate health service provision are major concerns facing regional Australia. In fact, living in regional locations of Australia is associated with poorer health outcomes, increased chronic disease mortality and lower life expectancy when compared with

21 expectations and experiences of people living in regional South Australia.

In addition to shedding new light on the health care needs of regional South Australians, the
findings of this research will make an important contribution to future health services planning.
Using the needs-based health workforce planning framework, the health care needs of this

living in metropolitan locations [40-43]. An important first step in addressing these health status

disparities is understanding the health care needs of the regional population. The RESONATE

survey will explore these needs in detail, as well as gain new insights into the health care

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population can be mapped against best practice care to estimate total health workforce requirements [44]. This model has already been applied to regional populations with diabetes [45] and mental illness [46], and takes a far more "richer perspective on population needs" than other workforce planning approaches [44]. Given the considerable health workforce maldistribution in regional South Australia [47-49], this is an important next step for this research.

If the RESONATE study can reach, or even exceed its target of 1,832 participants, it will represent the largest health survey conducted in regional South Australia. Importantly, the study will complement the results of other large studies of regional South Australians, including the Australian Bureau of Statistics National Health Survey (estimated n=818) [30] and the National Regional Wellbeing Survey (n=1,126) [50], by reporting unique insights into the regional South Australian population not yet available. Further, the large sample will enable meaningful subgroup analyses to be performed to better inform local policy and strategy (e.g. comparing needs between regions and statistical areas) [51]. The latter is a particularly important point, as the project is underpinned by a community-based participatory approach, whereby local communities will be actively involved in project promotion and implementation, as well as the dissemination and translation of research findings; this will ensure the research informs and facilitates meaningful change at the local level [52].

Despite its strengths, the RESONATE study does have a limitation - its susceptibility to selfselection bias. Whilst it is not possible to eliminate this bias entirely due to the use of nonprobability (self-selection) sampling, the study has put in place multiple measures to help mitigate this risk and the risk of other biases. These strategies include the implementation of a comprehensive multi-modal recruitment campaign with extensive reach to the regional SA population (to minimise undercoverage bias); intensive community engagement (to maximise

widespread community participation and reduce sampling bias); the provision of alternative
survey administration methods (to mitigate recruitment bias); the use of an instrument with
acceptable psychometric properties (to reduce measurement error), and the weighting of sample
data (to adjust for an unrepresentative sample) [53].

6 In summary, RESONATE will represent the largest health survey ever conducted in regional South 7 Australia. The study will further our understanding of the state of health of regional South 8 Australia, and will impart new insights into the health service experiences, utilization and 9 expectations of this population. Accordingly, the findings of this research will help us to better 10 understand the health care needs of regional South Australians. An important next step of this 11 research will be to map these needs against existing health workforce supply to enable policy 12 makers, health care providers, researchers and educationalists to identify the health workforce 13 required to better support the health of regional South Australians.

### 15 ETHICS AND DISSEMINATION

The study has been reviewed and approved by the Human Research Ethics Committee of the University of South Australia [Protocol ID: 0000034611], and will be conducted in accordance with the National Health & Medical Research Council (NHMRC) national statement on ethical conduct in research, as well as the approved study protocol. A detailed participant information sheet will preface each survey, with voluntary completion of the survey implying informed consent to participate. No personally identifiable information will be collected in order to maintain the anonymity of the survey.

The findings of the survey will be communicated using a comprehensive dissemination strategy.
The strategy will utilise various forms of media to reach out to a diverse range of stakeholder

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groups and individuals, at the local, national and international level; this will include the use of academic media (i.e. peer-reviewed journal articles, national and international conference presentations), social media (i.e. Facebook, Twitter), print media (i.e. newspaper), broadcast media (i.e. radio, television), the internet (i.e. links to study reports on the Department of Rural Health website), electronic and postal mail (i.e. posting of study findings to participants and stakeholders) and community/stakeholder engagement activities (i.e. community forums, stakeholder meetings). **ABBREVIATIONS** ANOVA: Analysis of variance CONVERSATIONS: Consumer utilisation, expectations and experiences of health care instrument IQR: Interguartile range **RESONATE:** Regional South Australia Health DECLARATIONS Ethics approval and consent to participate The study was approved by the Human Research Ethics Committee of the University of South Australia [Protocol ID: 0000034611]. Participants will be informed about the study via the survey cover sheet and project website. Informed consent will be implied through completion of the survey. **Consent for publication** Not applicable. Availability of data

1 2	1	Datasets used and/or analysed during the current study will be available from the corresponding
3 4 5	2	author on reasonable request.
6 7	3	
8 9 10	4	Competing interests
11 12	5	The authors declare that they have no competing interests.
13 14 15	6	
16 17	7	Funding
18 19 20	8	Not applicable.
20 21 22	9 10	Authors' contributions
23 24	10	ML conceptualised the project and drafted the manuscript. MJ, MG and EM reviewed and edited
25 26 27	12	the manuscript. All authors read and approved the final manuscript.
28 29	13	
30 31 32	14	Acknowledgements
33 34	15	This research will be supported by infrastructure provided by the Department of Rural Health,
35 36 37	16	University of South Australia.
38	17	
39	18	REFERENCES
40 41 42	19	1. The World Bank. World bank open data. 2017. <u>http://data.worldbank.org/</u> . Accessed 10
43 44	20	Aug 2017.
45 46 47	21	2. Australian Bureau of Statistics. Regional Population Growth, Australia, 2016. Cat. No.
48 49	22	3218.0. Canberra, Australia: Australian Bureau of Statistics; 2017.
50 51	23	3. Australian Bureau of Statistics. ABS.Stat. Canberra, Australia: Australian Bureau of
52 53 54	24	Statistics; 2017.
55 56	25	4. Organisation for Economic Co-operation & Development (OECD). OECD health policy
57 58	26	overview: health policy in Australia. Paris, France: OECD; 2015.
59 60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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1

2	1	5. Ahern T, Gardner A, Courtney M. Exploring patient support by breast care nurses and
3 4 5	2	geographical residence as moderators of the unmet needs and self-efficacy of Australian
6 7	3	women with breast cancer: Results from a cross-sectional, nationwide survey. Eur J Oncol
8 9 10	4	Nurs. 2016;23:72-80.
10 11 12	5	6. Colman E, Missinne S, Bracke P. The Role of Perceived Helpfulness in Predicting Subjective
13 14	6	Unmet Need and the Frequency of Health Care Use. Arch Psych Nurs. 2014;28:43-49.
15 16 17	7	7. Dezetter A, Duhoux A, Menear M, Roberge P, Chartrand E, Fournier L. Reasons and
17 18 19	8	Determinants for Perceiving Unmet Needs for Mental Health in Primary Care in Quebec.
20 21	9	Can J Psychiatr. 2015;60:284-293.
22 23	10	8. Ghuman SJ, Brackbill RM, Stellman SD, Farfel MR, Cone JE. Unmet mental health care need
24 25 26	11	10-11 years after 9/11 terrorist attacks: 2011-2012 results from the World Trade Center
20 27 28	12	Health Registry. BMC Public Health. 2014;14:491-499.
29 30	13	9. Ou L, Chen J, Hillman K. Socio-demographic disparities in the utilisation of general practice
31 32	14	services for Australian children - Results from a nationally representative longitudinal
33 34 35	15	study. PLOS One. 2017;12:e0176563.
36 37	16	10. Pappa E, Kontodimopoulos N, Papadopoulos A, Tountas Y, Niakas D. Investigating Unmet
38 39	17	Health Needs in Primary Health Care Services in a Representative Sample of the Greek
40 41 42	18	Population. Int J Environ Res Public Health. 2013;10:2017–2027.
43 44	19	11. Ronksley PE, Sanmartin C, Campbell DJT, Weaver RG, Allan M, McBrien KA, et al. Perceived
45 46	20	barriers to primary care among western Canadians with chronic conditions. Stat Can.
47 48 49	21	2014;25:3-10.
50 51	22	12. Andrade LH, Alonso J, Mneimneh Z, Wells JE, Al-Hamzawi G, Borges E, et al. Barriers to
52 53	23	mental health treatment: results from the WHO World Mental Health surveys. Psychol
54 55 56	24	Med. 2014;44:1303-17.
57		
58 59		18

1 2	1	13. Allen H, Wright B J, Harding K, Broffman L. The Role of Stigma in Access to Health Care for
3 4 5	2	the Poor. Milbank Q. 2014;92:289-318.
5 6 7	3	14. Monger M. Stigma: barrier to quality of life and health care. HIV Clinician. 2011;23:1,4-5.
8 9	4	15. Sheikh-Mohammed M, MacIntyre CR, Wood NJ, Leask J, Isaacs D. Barriers to access to
10 11 12	5	health care for newly resettled sub-Saharan refugees in Australia. Med J Aust.
12 13 14	6	2006;185:594-597.
15 16	7	16. Hull M, Fennell KM, Vallury K, Jones M, Dollman J. A comparison of barriers to mental
17 18 10	8	health support-seeking among farming and non-farming adults in rural South Australia.
19 20 21	9	Aust J Rural Health. 2017; Epub ahead of print.
22 23	10	17. Stewart H, Jameson JP, Curtin L. The relationship between stigma and self-reported
24 25	11	willingness to use mental health services among rural and urban older adults. Psychol Serv.
26 27 28	12	2015;12:141-148.
29 30	13	18. Syed ST, Gerber BS, Sharp LK. Traveling towards disease: transportation barriers to health
31 32	14	care access. J Community Health. 2013;38:976-993.
33 34 35	15	19. Andersen R, Newman JF. Societal and individual determinants of medical care utilization in
36 37	16	the United States. Milbank Q. 2005;83:1-28.
38 39	17	20. Babitsch B, Gohl D, von Lengerke T. Re-revisiting Andersen's Behavioral Model of Health
40 41 42	18	Services Use: a systematic review of studies from 1998–2011. Psychosoc Med.
43 44	19	2012;9:Doc11.
45 46	20	21. Bindman AB, Grumbach K, Osmond D, Komaromy M, Vranizan K, Lurie N, et al. Preventable
47 48 49	21	hospitalizations and access to health care. J Am Med Assoc. 1995;274:305–311.
50 51	22	22. McCusker J, Roberge D, Lévesque JF, Ciampi A, Vadeboncoeur A, Larouche D, et al.
52 53	23	Emergency department visits and primary care among adults with chronic conditions. Med
54 55 56	24	Care. 2010; 48: 972–980.
56 57 58		
59 60		19 For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

Page 20 of 28

#### BMJ Open

1 2	1	23. Zuckerman S, Shen YC. Characteristics of occasional and frequent emergency department
3 4 5	2	users: Do insurance coverage and access to care matter. Med Care. 2004;42:176–182.
6 7	3	24. Ronksley PE, Sanmartin C, Quan H, Ravani P, Tonelli M, Manns B, et al. Association
8 9	4	between perceived unmet health care needs and risk of adverse health outcomes among
10 11 12	5	patients with chronic medical conditions. Open Med. 2013;7:e21-30.
12 13 14	6	25. Ayanian JZ, Weissman JS, Schneider EC, Ginsburg JA, Zaslavsky AM. Unmet Health Needs of
15 16	7	Uninsured Adults in the United States. JAMA. 2000;284:2061-2069.
17 18	8	26. Hansen DG, Larsen PV, Holm LV, Rottmann N, Bergholdt SH, Søndergaard J. Association
19 20 21	9	between unmet needs and quality of life of cancer patients: A population-based study.
22 23	10	Acta Oncol. 2013;52:391-399.
24 25	11	27. Slade M, Leese M, Cahill S, Thornicroft G, Kuipers E. Patient-rated mental health needs and
26 27 28	12	quality of life improvement. Br J Psychiatry. 2005;187:256-261.
29 30	13	28. Smith AW, Parsons HM, Kent EE, Bellizzi K, Zebrack BJ, Keel G, et al. Unmet support service
31 32	14	needs and health-related quality of life among adolescents and young adults with cancer:
33 34 35	15	the AYA HOPE study. Front Oncol. 2013;3:75.
36 37	16	29. Australian Bureau of Statistics. National Health Survey: First Results, 2014-15. Cat. No.
38 39	17	4364.0.55.001. Canberra: Australian Bureau of Statistics; 2015.
40 41 42	18	30. Falci L, Shi Z, Greenlee H. Multiple Chronic Conditions and Use of Complementary and
42 43 44	19	Alternative Medicine Among US Adults: Results From the 2012 National Health Interview
45 46	20	Survey. Prev Chronic Dis. 2016;13:150501.
47 48	21	31. Busato A, Donges A, Herren S, Widmer M, Marian F. Health status and health care
49 50 51	22	utilisation of patients in complementary and conventional primary care in Switzerland - an
52 53	23	observational study. Fam Prac. 2006;23:116-124.
54 55		
56 57 58		
59		20

1	32. Chao M, Wade C, Kronenberg F, Kalmuss D, Cushman L. Women's reasons for
2	complementary and alternative medicine use: Racial/ethnic differences. J Altern
3	Complement Med. 2006;12:719-720.
4	33. Simoes-Wust A, Rist L, Dettling M. Self-reported health characteristics and medication
5	consumption by cam users and nonusers: A swiss cross-sectional survey. J Altern
6	Complement Med. 2014;20:40-47.
7	34. Sirois FM. Motivations for consulting complementary and alternative medicine
8	practitioners: A comparison of consumers from 1997–8 and 2005. BMC Complement Altern
9	Med. 2008;8:16.
10	35. Women's Health Australia. Australian Longitudinal Study on Women's Health: Surveys.
11	2015. http://www.alswh.org.au/for-researchers/surveys#. Accessed 23 Jul 2015.
12	36. Polit D, Hungler B. Nursing Research: Principles and Methods (seventh edition).
13	Philadelphia, USA: Lippincott; 2004.
14	37. Davis L. Instrument review: Getting the most from a panel of experts. App Nurs Res.
15	1992;5:194-197.
16	38. Koo TK, Li MY. A guideline of selecting and reporting intraclass correlation coefficients for
17	reliability research. J Chiropr Med. 2016;15:155-163.
18	39. Konstan JA, Rosser BRS, Ross MW, Stanton J, Edwards WM. The story of subject naught: a
19	cautionary but optimistic tale of Internet survey research. J Comput Mediat Commun.
20	2005;10:11.
21	40. Australian Institute of Health and Welfare (AIHW). Rural, regional and remote health -
22	indicators of health system performance. Rural Health Series no. 10, cat. No. PHE103.
23	AIHW: Canberra, Australia; 2008.
	21 For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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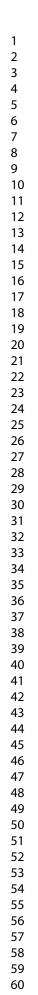
2	1	41. Beckmann KR, Bennett A, Young GP, Cole SR, Joshi R, Adams J, et al. Sociodemographic
3 4 5	2	disparities in survival from colorectal cancer in South Australia: a population-wide data
6 7	3	linkage study. BMC Health Serv Res. 2016;16:24.
8 9	4	42. Chondur R, Li SQ, Lawton P. Does relative remoteness affect chronic disease outcomes?
10 11 12	5	Geographic variation in chronic disease mortality in Australia, 2002–2006. Aust NZ J Public
13 14	6	Health. 2013;38:117-121.
15 16	7	43. Fox P, Boyce A. Cancer health inequality persists in regional and remote Australia. Med J
17 18 19	8	Aust. 2014;201:445-446.
20 21	9	44. Segal L, Leach MJ. An evidence-based health workforce model for primary and community
22 23	10	care. Implement Sci. 2011;6:93.
24 25 26	11	45. Segal L, Leach MJ, May E, Turnbull C. Regional primary care team to deliver best-practice
27 28	12	diabetes care: a needs-driven health workforce model reflecting a biopsychosocial
29 30	13	construct of health. Diab Care. 2013;36:1898-1907.
31 32 33	14	46. Furber G, Segal L, Leach M, Turnbull C, Procter N, Diamond M, et al. Preventing mental
34 35	15	illness: closing the evidence-practice gap through workforce and services planning. BMC
36 37	16	Health Serv Res. 2015;15:283.
38 39 40	17	47. Department of Health. The national health workforce dataset (NHWDS): Physiotherapy
41 42	18	2015. Canberra, Australia: Department of Health; 2015.
43 44	19	48. Department of Health. Nurses and midwives 2016 fact sheet. Canberra, Australia:
45 46 47	20	Department of Health; 2017.
48 49	21	49. Tennant M, Kruger E, Shiyha J. Dentist-to-population and practice-to-population ratios: in a
50 51	22	shortage environment with gross mal-distribution what should rural and remote
52 53 54	23	communities focus their attention on? Rural Remote Health. 2013;13:2518.
55 56		
57 58		
59 60		22 For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

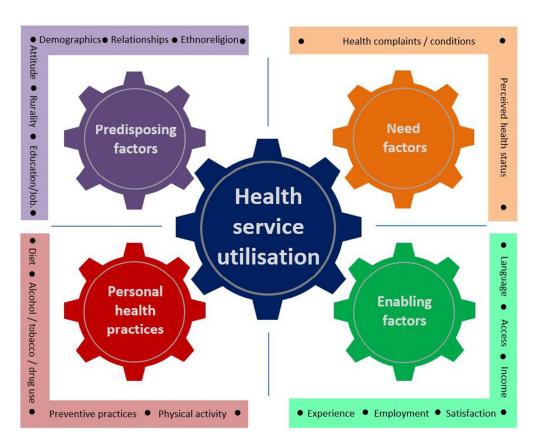
1 2 3	1	50. Centre for Research and Action in Public Health. 2015 regional wellbeing survey data
4 5	2	tables: South Australia - natural resource management regions. University of Canberra:
6 7	3	Canberra, Australia; 2016.
8 9	4	51. De Vaus D. Surveys in social research (sixth edition). Oxon, UK: Routledge; 2014.
10 11	5	52. Hacker K. Community-based participatory research. Thousand Oaks, USA: Sage; 2013.
12 13 14	6	53. Keeble C, Law GR, Barber S, Baxter PD. Choosing a method to reduce selection bias: a tool
15 16	7	for researchers. Open J Epidemiol. 2015;5:155-162.
18         19         20         21         22         23         24         25         26         27         28         29         30         31         32         33         34         35         36         37         38         39         40         41         42         43         44         45         46         47         48	8	for researchers. Open J Epidemiol. 2015;5:155-162.
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60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

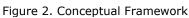
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1 2	1	FIGURES
3 4	2 3	Figure 1. RESONATE flow chart
5 6 7	4 5	Figure 2. Conceptual framework of the CONVERSATIONS
7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 445 46 47 48 49 50 51 52 53 54 55 56 57 58 960		

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8	elopment of estionnaire       Psychometric evaluation of questionnaire       (6 months)       (a months)       (a months)       (b months)       (b months)       (c months)
10 11 12	Figure 1. RESONATE flow chart
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Section/Topic	Item	Recommendation	Reported
	#		
Title and abstract	1	(a) Indicate the study's design with a commonly used term in the title or the abstract	1
		(b) Provide in the abstract an informative and balanced summary of what was done and what was found	N
Introduction	1		
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	3-
Objectives	3	State specific objectives, including any prespecified hypotheses	5.
Methods			
Study design	4	Present key elements of study design early in the paper	
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data	6, 1
		collection	
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection of participants	
		CI.	
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if	9-
Variables		applicable	5
Data sources/	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe	9-
measurement		comparability of assessment methods if there is more than one group	
Bias	9	Describe any efforts to address potential sources of bias	13
Study size	10	Explain how the study size was arrived at	
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and	Ν
		why	
Statistical methods	12	(a) Describe all statistical methods, including those used to control for confounding	11
		(b) Describe any methods used to examine subgroups and interactions	11
		(c) Explain how missing data were addressed	1
		(d) If applicable, describe analytical methods taking account of sampling strategy	1
		(e) Describe any sensitivity analyses	Ν

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Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	NA
		(b) Give reasons for non-participation at each stage	NA
		(c) Consider use of a flow diagram	NA
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	NA
		(b) Indicate number of participants with missing data for each variable of interest	NA
Outcome data	15*	Report numbers of outcome events or summary measures	NA
Main results	16	(a) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence	NA
		interval). Make clear which confounders were adjusted for and why they were included	
		(b) Report category boundaries when continuous variables were categorized	NA
		(c) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	NA
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	NA
Discussion			
Key results	18	Summarise key results with reference to study objectives	NA
Limitations	mitations 19 Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias		13-14
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	NA
Generalisability	21	Discuss the generalisability (external validity) of the study results	NA
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	15

\*Give information separately for cases and controls in case-control studies and, if applicable, for exposed and unexposed groups in cohort and cross-sectional studies.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

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