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# An evaluation of healthcare seeking behaviours through a telephone health advice and triage service

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## ABSTRACT

Globally, healthcare systems face strain from inappropriate consumer care-seeking behaviors, and solutions are needed to direct them to appropriate care avenues, including self-management. The Healthdirect Australia 24/7 National Coronavirus Helpline was established to provide telephone health advice and triage. This study evaluates the helpline's performance, consumer satisfaction, and influence on care-seeking behaviors. Using an online survey and telephony metrics, data from 329 survey respondents and 94,494 calls were analyzed. Results showed efficient service with most calls answered within 48 seconds and a low call abandonment rate of 4%. The average call length was 7 min and 13 s. Consumer satisfaction was high, with 71% rating it as high or very high. The helpline influenced health-seeking behaviors positively, ( $\chi^2(1, N=943)=89.0, p < .0001$ ) with a 35% increase in self-management, a 12% reduction in unnecessary emergency department visits, and a 5% reduction in emergency services calls. Further research is needed to assess the long-term impact of this care model.

**Abbreviations:** ED: Emergency Department; GP: General Practitioner


## KEYWORDS

Covid; evaluation; Healthcare seeking behaviour; telephone health advice and triage

## Introduction

Health marketing contributes to improving health outcomes through core marketing activities including conducting consumer research, creating effective distribution channels, and improving access to services. These

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activities can enhance the adoption and implementation of health behaviors and practices (Parkinson & Davey, 2023). Health marketing also plays a key role in bridging the gap between clinical expertise and community understanding through the promotion of *health literacy*, namely, an individual's capacity to make sound health decisions in the context of everyday life and the capability to participate in such decisions (Schulz & Nakamoto, 2013). The importance of health marketing lies in its ability to enhance communication, engagement, and decision-making among consumers, healthcare providers, and policymakers, thereby facilitating the efficient and effective delivery of health services. Health marketing approaches can play an important role in addressing a range of health issues by fostering more appropriate healthcare utilization through targeted communication, education, and engagement strategies with appropriate health services. For example, telephone health advice lines are used support consumers to access appropriate health services for receiving care. The purpose of this paper is to present the findings of an evaluation of a telephone health advice line in Australia that sought to support consumers who had tested positive to COVID-19.

## Background

Consumers accessing healthcare services that do not align with their clinical needs or urgency is a significant factor contributing to the strain on health systems globally. This behavior, often referred to as “inappropriate care seeking,” occurs when individuals utilize healthcare services that are mismatched to the level of urgency or severity of their condition. For example, presenting to an Emergency Department (ED) for non-urgent medical issues that could be adequately managed through a primary care visit. This misalignment not only places unnecessary pressure on overstretched emergency department services but also diverts resources from patients with more critical needs, thereby exacerbating systemic inefficiencies and potentially leading to poorer health outcomes. One Australian retrospective study of 822,841 ED presentations found that between 8%–27% could have been managed in a primary care setting (Toloo et al., 2020). A cross-sectional study involving the clinical assessment of 506 patients by General Practitioners (GP) of patients presenting to ED found that 80% of presentations were primary care type appointments (20%–40% after accounting for potential bias) (Whyatt et al., 2019). Reasons for inappropriate presentation to the ED are multifactorial. A cross-sectional telephone survey of 1,256 participants found reasons informing this behaviour include perceived severity of illness and lack of alternative care (FitzGerald et al., 2015). These studies highlight the need to develop solutions to support the careful use of

limited health resources and divert consumers to appropriate avenues for receiving care.

Thus, there is need to create effective distribution channels to provide access to appropriate health services. Potential distribution channels include telehealth consultations and telephone advice and triage lines. Telehealth consultations are usually delivered by trained healthcare clinicians such as a GP or Nurse and include full health assessments (Bunn et al., 2004; Farzandipour et al., 2024; Healthdirect Australia, 2022). These services are designed to increase access and decrease time commitments, for example they can be used to provide a prescription to consumers where appropriate (Healthdirect Australia, 2022) reducing their need for an in-person consultation. Conversely, telephone advice and triage lines are generally staffed by non-clinicians (or a mix of clinical and non-clinical staff) and rely upon data input to help guide decision making (Hutchings et al., 2021; Nakubulwa et al., 2022). The advice provided via telephone advice and triage lines is more generalized in nature and aims to provide consumers with sufficient information to self-manage their care (when appropriate) or seek out appropriate channels for further assessment and treatment. Increasingly, telephone health advice lines are used as a solution for supporting consumers to access appropriate services for receiving care. Versatile in nature, telephone health advice lines vary in their purpose and composition including: (i) providing specific disease advice services (e.g., COVID-19, mental health, diabetic foot ulcers), (ii) triage and care referral, and (iii) general information to support self-help (Bunn et al., 2004; Farzandipour et al., 2024). A 2023 systematic review outlined the effectiveness of triage advice lines in reducing unnecessary ED visits by 1.2%–22% (Farzandipour et al., 2024). Thus, the implementation of telephone health advice lines may offer a viable option to reduce the strain on health services and ensure consumers are accessing appropriate care, particularly during health emergencies, when resources are stretched to the limit.

The increasing use of telephone health advice lines highlights their potential as critical tools within the healthcare system and for health marketing. These services not only facilitate access to appropriate care but also represent a key component of consumer-focused healthcare delivery systems, aligning with principles of service marketing (Hammedi et al., 2024) and the broader evolution of e-services. Effective health marketing encompasses not just promotional activities but also the design and delivery of services that meet consumer needs, build trust, and enhance engagement with appropriate care pathways (Parkinson & Davey, 2023).

## Relevance to health marketing

1. Healthcare systems globally face growing demand, necessitating innovative solutions to optimize resource allocation and consumer access to care (Hoe & Grunwald, 2015). Telephone health advice and triage services, such as the National Coronavirus Helpline in Australia and long-established services like Plunketline in New Zealand, are examples of how healthcare providers leverage marketing principles to enhance service delivery. These types of services address the pressing issue of inappropriate care seeking by providing consumers with tailored information, referrals, and support, ensuring that healthcare resources are utilized effectively (Leibowitz et al., 2003; Matthewson et al., 2020).
2. From a health marketing perspective, these services align with *OPAZO-BASAEZ ET AL.* (2022) (Lake et al., 2017) conceptualization of digital service innovation, where the service offering is designed to meet the specific needs of diverse consumer segments that leverages connectedness to create value via digitally enhanced provider-customer relationships (Hegde et al., 2021). Telephone health advice lines also embody relational marketing principles by fostering trust, satisfaction, and long-term engagement between healthcare providers and consumers (Roivainen et al., 2021).
3. The implementation of telephone health advice lines aligns with the theoretical underpinnings of digital service quality. Digital services refer to the provision of services over electronic networks, designed to enhance convenience, accessibility, and consumer satisfaction (Williams et al., 2012). Triage and advice lines operate within this framework by offering on-demand, 24/7 access to tailored health advice, thereby addressing barriers to care such as geographic isolation, time constraints, and the need for immediate assistance.

As part of the Australian Government COVID-19 response, a multi component service called the “Living with COVID program” was developed in partnership with Healthdirect Australia and the Commonwealth Department of Health and Aged Care (Healthdirect Australia, 2022). The program consisted of a 24/7 National Coronavirus Helpline, a GP secure messaging service, and a website that contained comprehensive information to support consumer understanding of symptoms, treatment, and additional support options (Healthdirect Australia, 2022). The program was designed to support consumers triaged as low or medium risk of requiring hospitalization to care for themselves at home or in partnership with a GP (See [Supplementary File 1](#)– Risk stratification tool) (Healthdirect Australia, 2022). This paper focuses on the 24/7 National Coronavirus Helpline; a telephone health advice and triage service for consumers seeking advice

and support about how and where to access appropriate care (Healthdirect Australia, 2022). The remaining program component evaluation can be accessed via this link: [https://media.healthdirect.org.au/publications/CSIRO\\_Living-with-COVID-program-evaluation.pdf](https://media.healthdirect.org.au/publications/CSIRO_Living-with-COVID-program-evaluation.pdf)

Whilst there are studies reporting the effectiveness of telephone advice and triage services, the expected performance of such a service, whether consumers are satisfied with telephone advice options, and if consumer care seeking behaviors are influenced remains unclear (Hutchings et al., 2021). Healthdirect Australia, in partnership with the Commonwealth Scientific and Industrial Research Organisation (CSIRO) undertook an evaluation of the program to help understand whether the program was achieving its' intended aims of supporting patients at low or medium risk of hospitalization to care for themselves at home or in partnership with a local GP. It also aimed to understand the impact of the telephone health advice and triage service on COVID positive consumer satisfaction, engagement, and influence on consumer health-seeking behaviors.

## **Methods**

### ***Design***

A multi method evaluation using data from two sources (telephony metrics and a consumer survey) to provide an integrated snapshot of the 24/7 National Coronavirus Helpline. All participant data was anonymous, aggregated, or de-identified before transfer to CSIRO.

### ***Participant recruitment***

Ethical approval was granted by the CSIRO Health and Medical Human Ethics Committee (reference: 2022\_034\_LR). A full privacy impact assessment was also undertaken by an independent third party to ensure compliance with Australian Privacy Principles (Office of the Australian Information Commissioner, 2020). All survey participants were provided with an information and informed consent form prior to participating.

### ***Online survey***

A cross-sectional online survey was distributed to participants via SMS by a third-party organization specializing in survey distribution over 13 weeks (Jul–Oct 2022). SMS invitations were sent to participants between 7 and 9d after their initial engagement with the 24/7 National Coronavirus Helpline. Consumers were eligible to participate if they: (i) were aged 18 years or older, (ii) resided in South Australia or Queensland, Australia), (iii) stated they had been diagnosed with COVID-19, and (iv) were assessed

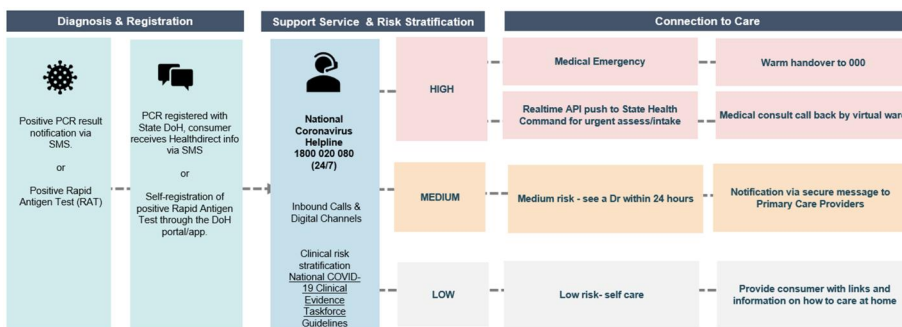
as low or medium risk of hospitalization. Consumers who were at high risk of hospitalization were excluded from the survey. All data provided to CSIRO was anonymous.

### Telephony metrics

Healthdirect Australia Customer Relationship Management (CRM) and telephony data included Qld and SA consumers who called the 24/7 National Coronavirus Helpline, from 1 May 2022 to 7 November 2022.

### Intervention description

The comprehensive digital health support program, known as the “Living with COVID program” included a telephone health advice and triage service and an informational website (See [Supplementary File 2– Digital Health Support Program Overview](#)). Consumers who tested positive to COVID-19 and registered a Rapid Antigen Test (RAT) and/or Polymerase Chain Reaction (PCR) test received a notification from State Public Health Units in Queensland and South Australia advising them to call the 24/7 National Coronavirus Helpline for further assessment and assistance. The telephone health advice line was staffed by a multidisciplinary team of nurses and non-clinicians who were trained to ask a series of questions for which answers assisted in assessing and triaging consumers to the right pathway of care. There were three pathways of care available according to the consumer risk of hospitalization (low, medium, or high) (See [Figure 1](#)). Consumers who were confirmed as low or medium risk were also directed to access the Healthdirect Australia website which contained information related to COVID-19 including treatment, when to seek additional care, and how to access further support (e.g., food delivery). High risk consumers were directed to call 000 and are not included in this evaluation as they were directed to seek health advice elsewhere. Only outcomes related to the 24/7 National Coronavirus Helpline are reported here.



**Figure 1.** Overview of consumer support pathway.

## Data collection

### *Telephony metrics*

Healthdirect Australia provided CSIRO with a raw data extract of information collected during 94,494 calls to the 24/7 National Coronavirus Helpline between May and November 2022. Data fields included wait time, call duration, risk triage category, caller relationship, gender, age bracket, COVID-19 status.

### *Online survey*

In total, 2,784 SMS invitations were sent to eligible consumers, with 329 responses received, reflecting a 12% response rate. Recruitment, although low, was more favorable than expected given that no reimbursement was available to participants and this method of recruitment has shown completion rates as low as 3% in the wider body of evidence (Hoe & Grunwald, 2015). Participants were asked to rate their agreement (from strongly disagree to strongly agree) and satisfaction levels (not satisfied at all to very satisfied) about various components of the telephone advice and triage service. The survey also contained multiple-choice options to collect information about consumer health-seeking behaviors (see [Supplementary File 3 – Consumer Survey](#)). Only survey items relevant to the helpline are included in the results. The survey was pilot tested among team members using both desktop and mobile devices to ensure face validity.

## Data analysis

### *Telephony metrics*

Raw data was summarised by week of year and state. Data cleaning and refactoring was undertaken where required. Missing data in the CRM datasets was treated as intentional by consumers. Individual demographic variable summaries include the number of missing values. Analysis was carried out using MS Excel. Simple summary statistics were undertaken on all data. Categorical data are presented either as totals or percentages of individual levels within categories. Any categorical data consisting of multiple responses is noted in the accompanying text. Numeric variables are presented as either totals or means.

### *Online survey*

Survey data were analyzed using descriptive statistics. Counts and percentages are used for categorical data. A Chi-square test of independence was undertaken for health seeking behavior responses. The options “Search for

GP” and “Called family/friends” were removed before analysis due to zero cell counts arising from the option not available at the time of the survey.

## Results

### *Telephony metrics (demographics)*

In total, there were 94,494 callers from two states in Australia (Queensland and South Australia) to the 24/7 National Coronavirus Helpline from May to November 2022. Of these, 90,867 (96%) were handled by call center staff. Just over half (52%) of callers were confirmed COVID positive and most were aged between 31 and 70 years. Most callers rang on their own behalf. There were many callers who did not provide sufficient information to enable a risk triage score to be allocated. Of those that did call, 13% ( $n = 12,166$ ) were identified as low or medium risk, and 7% high risk ( $n = 6,745$ ).

### *Call centre efficiency*

Table 1 shows the wait times and rate of abandonment. Consumers who called the helpline waited around 48 s (0.8 min) before having their call answered, which is slightly higher than a previously reported study of a psychology-led COVID-19 telephone support line (mean 28 s) (Matthewson et al., 2020). However, the number of calls received per day (mean 23 calls per day) was lower than that of the 24/7 National Coronavirus Helpline (mean 482 calls per day) (Matthewson et al., 2020). The rate of abandoned calls was low with only 4% of calls abandoned. The average call length was 7.22 min (7 min, 13 s).

### *Online survey demographics*

Table 2 shows the demographics of survey participants. Most survey respondents were English-speaking (81%), aged between 55 and 74 years of age (54%), and female (68%). Most (74%) were at low risk of hospitalization and from a metropolitan area (74%). Almost half (48%) of participants lived in a two-person household, with 22% living alone. The majority did not have children living in their home (53%).

**Table 1.** Call center efficiency.

Variable	Total
Call volume = $n$	94,494
Abandoned calls = $n$ (%)	3,627 (4)
Handled calls = $n$ (%)	90,867 (96)
Avg wait time (mins) (mean (SD))	0.80 (1.83)
Avg call duration (mins) (mean (SD))	7.22 (6.22)

Percentages are rounded to the nearest decimal place.

**Table 2.** Consumer survey demographics.

Demographic	Total
Total respondents	329
Age = <i>n</i> (%)	
18–24 years	3 (0)
25–34 years	22 (7)
35–44 years	39 (12)
45–54 years	40 (12)
55–64 years	69 (21)
65–74 years	107 (33)
75+ years	49 (15)
Gender = <i>n</i> (%)	
Female	225 (68)
Male	104 (32)
Risk of hospitalisation = <i>n</i> (%)	
Low risk	244 (74)
Medium Risk	85 (26)
Regional/Metro location = <i>n</i> (%)	
Regional	85 (26)
Metropolitan	242 (74)
Prefer not to say	3 (0)
Highest level of education = <i>n</i> (%)	
Post graduate degree	44 (13)
Grad cert/diploma	46 (14)
Bachelor's degree	58 (18)
Adv. Dip/Diploma	43 (13)
Certificate level	46 (14)
Senior secondary	63 (19)
Junior secondary	15 (5)
Primary education	2 (1)
Other	4 (1)
Rather not say	8 (2)
Language other than English (Y/N) = <i>n</i> (%)	
No	265 (80)
Yes	61 (19)
Rather not say	4(1)
How many people usually live in your household? = <i>n</i> (%)	
1	73 (22)
2	157 (48)
3	49 (15)
4 or more	50 (15)
Do you have children living in your household? = <i>n</i> (%)	
Yes	80 (24)
No	174 (53)
Rather not say	2 (1)
N/A	73 (22)

### **Consumer satisfaction**

Overall, consumers were highly satisfied with the 24/7 National Coronavirus Helpline, with 71% of respondents providing a rating of 8 or higher out of 10. Consumers were also asked to rate their satisfaction with individual elements of the helpline. Most were satisfied or very satisfied with the following elements: access to the service (including call menus and pre-call information) 83%; time kept on hold 84%; answers to consumer questions 79%; advice provided 78%; communication skills and support provided by the call handler 84% (See [Table 3](#)).

### **Health seeking behavior**

To understand the impact of the 24/7 National Coronavirus Helpline on consumer health-seeking behaviours, participants were asked what they

**Table 3.** Elements of service satisfaction ratings.

	Very dissatisfied <i>n</i> (%)	Dissatisfied <i>n</i> (%)	Neutral <i>n</i> (%)	Satisfied <i>n</i> (%)	Very Satisfied <i>n</i> (%)
Access to the service (including call menus and pre-call information)	2 (2)	5 (2)	44 (13)	140 (43)	133 (40)
Time kept on hold	5 (2)	8 (2)	40 (12)	148 (45)	128 (39)
Answers to your questions	8 (2)	19 (6)	43 (13)	101 (31)	158 (48)
Advice provided to you	16 (5)	21 (6)	34 (10)	97 (29)	161 (49)
Communication skills and support provided by the call handler	8 (2)	16 (5)	28 (9)	99 (30)	178 (54)

**Table 4.** Health seeking behavior before versus after contact with the 24/7 National Coronavirus Helpline.

Option	Before calling the helpline			After calling the helpline			Difference (% cases)
	<i>n</i>	% responses	% cases	<i>n</i>	% responses	% cases	
Contact GP	177	36%	54%	175	34%	53%	−1%
Search for a GP				29	6%	6%	N/A
Searched the internet for info	101	21%	31%	55	11%	17%	−14%
Monitored symptoms/ Isolated	93	19%	28%	208	41%	63%	+35%
Hospital	45	9%	14%	8	2%	2%	−12%
Called family/friends	28	6%	9%				N/A
Call 000 (emergency services)	19	4%	6%	7	1%	1%	−5%
See pharmacist	15	3%	5%	15	3%	5%	−
Other	14	3%	4%	11	2%	2%	−2%
<b>Total</b>	<b>492</b>	<b>100%</b>	<b>150%</b>	<b>508</b>	<b>100%</b>	<b>154%</b>	

would have done had the helpline not been available and what actions they took after calling the helpline. The chi square analysis revealed a significant difference in health seeking behavior before and after contact with the 24/7 NCH,  $\chi^2(1, N=943) = 89.0, p < .0001$ ). When asked what they would have done before versus after calling the helpline, there was a 35% increase in the number of people who would self-manage their care at home. After calling the helpline there was also a reduction of 12% in hospital visits and a 5% decrease in the number of people who would have contacted emergency services (called 000). Based on the consumer survey responses alone, 37 ED visits were potentially saved. When applying this proportion to low and medium risk disposition consumers who called the helpline ( $n=12,166$ ), this is scaled up to a potential of 1,363 ED visits saved (see Table 4).

***Includes multi-response answers including percentage of responses and percent of cases for each question***

## Discussion

The purpose of this paper was to present the findings of an evaluation of a telephone health advice line in Australia that sought to support consumers

who had tested positive to COVID-19. The evaluation found the 24/7 National Coronavirus Helpline provided an efficient service that is highly valued by survey participants. Further, it positively influenced the care seeking behaviors of consumers, reducing unnecessary ED presentations and emergency services calls. Literature reporting service metrics of telephone health advice lines is scant, making it hard to benchmark the performance of this service against others. The wait time for calls to be answered were short which may have contributed to consumer satisfaction with the helpline, however, provision of data regarding the staffing levels would assist would provide further insight into how staffing levels may have influenced wait times. Despite a slightly longer wait time when compared to that reported in Matthewson et al. (Matthewson et al., 2020), the service maintained high levels of consumer satisfaction and there were low abandonment rates. Given the difference in calls volumes between the two studies, it may be reasonable to expect a longer wait time. Further research is needed to understand the minimum standard wait time to avoid compromising consumer engagement and satisfaction.

Consumer satisfaction in relation to the service was high amongst survey respondents. High levels of satisfaction amongst participants were found for all indicators for service quality including call menus and pre-call information, time kept on hold, answers to consumer questions, advice provided, and communication skills and support provided by the call handler. Wider evidence that specifically reports on satisfaction in relation to telephone health advice and triage lines is limited, thus making comparisons difficult. Many studies that do make generalizations about consumer satisfaction are in relation to telehealth consultation and not telephone advice and triage phone lines (Bunn et al., 2004; Farzandipour et al., 2024; Lake et al., 2017; Leibowitz et al., 2003). This is an important conceptual distinction as the two interventions are very different from one another. Telehealth consultations are usually delivered by a trained GP or Nurse and include full health assessments (Bunn et al., 2004; Lake et al., 2017; Leibowitz et al., 2003). Sometimes these services are used to provide a prescription to consumers where appropriate (Leibowitz et al., 2003). Telephone advice and triage lines are generally staffed by non-clinicians (or a mix of clinical and non-clinical staff) and rely upon data input to help guide decision making (Hegde et al., 2021; Nakubulwa et al., 2022). The advice provided in the latter is more generalised in nature and aimed to equip consumers with enough information to self-manage their care (when appropriate) or seek out appropriate avenues for further assessment and treatment. Despite the lack of clarity, there are some small studies that show links between satisfaction levels and consumer decision making (Roivainen et al., 2021; Williams et al., 2012). To support service quality

outcomes, further research that measures consumer satisfaction in the context of telephone health advice and triage is needed. Literature reporting the efficacy and consumer satisfaction of such approaches should also take care to make important conceptual distinctions between the two interventions to ensure that appropriate comparisons can be made.

In addition to high levels of satisfaction, the 24/7 National Coronavirus Helpline appeared to facilitate survey participants to make choices that reduced pressure on the health system/services, as intended. This highlights the potential utility of such services in triaging people to appropriate levels of care. Greater certainty would be facilitated by a study design that allowed researchers to compare the behavior of those who did not call the helpline with similar conditions and demographics to those included. Some of the behavior choice options are not present in both before and after calling the helpline as the questions were developed around the service provision. For example, agents answering calls were trained to direct consumers to search for a GP on the Healthdirect website if they did not have one/could not get into see their own. The main behaviors of interest were in the diversion of consumers who were low or medium risk of hospitalization away from the hospitals and prevent unnecessary emergency service (000) calls. These behaviors potentially diverted pressure from overburdened tertiary settings to primary or self-care.

This may be explained by the helpline acting as a brief intervention, that is, a short purposeful, personalized conversation with a person about a health issue (Mannie et al., 2020), to increase participants' health literacy (Schulz & Nakamoto, 2013) and self-efficacy in undertaking their own care and accessing the right level of care and support in their home (Williams et al., 2012). A 2012 study surveyed consumers about their care decisions following teletriage advice found that callers with greater self-efficacy were 1.1 times more likely to report engaging in self-care (Williams et al., 2012). In our study, there was a decrease in both hospital visits and people contacting emergency services, supporting the notion that the advice provided acted as a brief intervention to support self-efficacy in care decisions.

Providing telephone triage advice has been found to assist with strategies to manage demand for healthcare services, with studies showing high levels of compliance with directives for help-seeking behaviors (Nakubulwa et al., 2022; Tran et al., 2017). Results from this study provide further evidence in support of strategies applying telephone triage advice to manage demand. Although these are consumer self-reported measures, they provide an indication of the extent to which consumers follow telephone triage advice. In a study which linked telephone health advice to Emergency Department (ED) presentations, hospital admissions, and medical consultation claims, levels of compliance were reported to be somewhat high for attend ED immediately,

see a doctor, and self-care) (Tran et al., 2017). Higher levels of compliance with the direction of self-care were also seen in a retrospective study on the United Kingdom National Health Service (NHS) 111 non-emergency medical helpline (Nakubulwa et al., 2022). In their study including over 1.9 million patients, they found half of the callers complied with the advice given, with the highest compliance levels when directed to self-manage at home (Nakubulwa et al., 2022). Given the reasonably high levels of compliance reported in other studies, particularly when directed to self-manage care, it is reasonable to assume that the helpline contributed to some differences in behavior reported, although the reliability of the exact impact is not possible to determine given the nature of the study.

### ***Implications for health marketing***

This study has several implications for health marketing. First, the high levels of satisfaction and positive consumer feedback on the 24/7 National Coronavirus Helpline highlight the importance of trust and engagement in health marketing. This helpline's ability to provide timely and effective advice increased consumer confidence, suggesting that health marketing efforts should emphasize reliability and consumer-centric service features. By showcasing successful case studies such as this one, health marketers can develop strategies to build trust and promote similar health services effectively.

The differences between telephone advice/triage lines and telehealth consultations highlights the need for targeted communication strategies in health marketing initiatives such as services delivered by national health services. Clearly articulating the specific benefits and functionalities of the specific service can help consumers make informed choices and drive traffic to the health service or helpline. Health marketers should develop tailored messages that address the unique attributes of telephone triage, such as rapid response and general health guidance, distinct from the comprehensive care provided in telehealth consultations.

The helpline's success in influencing care-seeking behaviors through brief interventions indicates this a valuable strategy that can be leveraged in health marketing. Health marketers should promote the concept of brief, personalized health conversations that empower consumers to manage their own care effectively. Highlighting the efficacy of brief interventions in advertising and educational materials can encourage consumers to utilize these services, potentially reducing the burden on emergency and hospital services.

The findings that the helpline may have increased consumer self-efficacy in self-managing care highlight the importance of promoting self-care in health marketing initiatives and campaigns. Emphasizing the role of telephone health advice in promoting self-reliance and providing actionable

health information can appeal to consumers who prefer managing their health independently when appropriate. Marketing materials should focus on the accessibility and convenience of obtaining reliable health advice to support self-care.

The study's observation that literature on telephone health advice service metrics is scarce points to an opportunity for health marketers to advocate for standardized benchmarking. By promoting the collection and dissemination of service performance data, health marketers can highlight the quality and effectiveness of their health services. Transparent reporting on metrics such as wait times, staffing levels, and consumer satisfaction can provide useful insights for managing service improvement and for the development of future initiatives aiming to use telephone helplines.

These implications suggest that there are a range of opportunities for telephone health advice lines as part of a comprehensive health marketing initiative to promote self-efficacy and build trust and engagement among consumers.

### *Lessons learned and recommendations*

- **What We Know Now**
  - Telephone health advice lines effectively reduce inappropriate care seeking, aligning with reductions in unnecessary ED visits reported in prior studies (Bunn et al., 2004).
  - High levels of consumer satisfaction and trust indicate that these services are not only operationally effective but also well-received by users.
- **What Worked Well**
  - Seamless integration of the National Coronavirus Helpline into the “Living with COVID” program, providing 24/7 support tailored to consumer needs during a health crisis.
  - Responsiveness of the service in addressing consumer concerns and guiding them to appropriate care pathways.
- **What Did Not Work Well**
  - Limited outreach and engagement with underserved populations, highlighting systemic barriers to access.
  - Ambiguities in triage protocols occasionally led to confusion in care recommendations.
- **What Could Be Done Differently**
  - Enhance accessibility for vulnerable groups through targeted outreach and support initiatives.

- Refine triage protocols to ensure clarity and consistency in care recommendations.
- Leverage data analytics to optimize triage decision-making and improve service delivery.
- Explore hybrid models combining telephonic advice with digital tools and in-person support to create a more comprehensive care framework.

### **Limitations**

This paper provides valuable insights into the feasibility of a telephone health advice and triage line to positively influence appropriate care seeking behaviors. However, there are some limitations to note. First, the consumer survey had a small sample size, which may not be representative of the broader population. For the telephony metrics data, only 13% of callers were able to be risk stratified as low or medium risk, and it would have been beneficial to have been able to link pathology results with callers to obtain a more accurate picture of caller COVID-19 status. This data also would have provided insights into the populations who did register a positive test but did not call the helpline. However, it provides a snapshot that can assist with future decision-making for these types of services. Second, the health seeking behavior outcome was reliant on consumer self-reporting which is subject to bias.

Behaviors and overall awareness of COVID-19 would have likely been influenced by public messaging and a longitudinal study design would be useful to capture changes over time in the context of condition specific telephone advice and triage lines. Some questions also allowed respondents to select more than one response option, which while reflecting real world behaviors, in retrospect made it difficult to draw finite conclusions regarding the helplines impact on health seeking behavior. Third, the action options provided to consumers in the survey before and after calling the helpline would have given greater reliability if the same response options were provided for both survey items. However, given that the outcome of interest was centered around a reduction in emergency department visits and calls to emergency services, the data still provides valuable insight. Finally, the 24/7 National Coronavirus Helpline was delivered across multiple states and not able to be linked easily to ED presentations, hospital admissions, and GP visits, impacting the reliability of conclusions drawn regarding care-seeking behavior. Additionally, links between the CRM data and survey responses may also have provided valuable insights. However, when comparing this service to others of a similar nature in the evidence base, it is likely that there was a positive effect on consumer health seeking behaviors.

## Conclusions

The 24/7 National Coronavirus Helpline operated an efficient service that was highly valued by survey responders. Health seeking behaviors were likely positively influenced with potential reductions in unnecessary ED visits and emergency services calls. Further research is needed to facilitate benchmarking of how services such as this should perform to maintain consumer satisfaction and engagement. Papers that publish data in relation to telephone health advice and triage services should be careful to make clear conceptual distinctions between this and similar services to enable more accurate comparisons. Given the positive impacts of the service, even when compared to other limited evidence, it is worthwhile to continue pursuing these types of interventions to provide accessible health services for consumers and alleviate the burden on tertiary and primary health settings.

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## Authors contributions

AD contributed to data analysis and synthesis as well as conceptualizing and drafting the original manuscript. NG contributed to project conceptualization data analysis and synthesis as well as drafting the original manuscript. PN contributed to project conceptualization, data collection instrument development, reviewed and contributed to the final manuscript version. CP contributed to project management, reviewed the manuscript, and contributed to the final manuscript version. RJ contributed to project conceptualization, oversight of data collection and synthesis as well as reviewing and contributing to the final manuscript version. JP contributed to data analysis, synthesis as well as the conceptualisation and drafting the original manuscript.

## Consent form

Consent for publication was not required as there is no identifying information contained in the report.

## Ethical approval

The granting of full ethical approval occurred before the commencement of the study by the CSIRO Health and Medical Human Ethics Committee (reference: 2022\_034\_LR). All survey participants were provided with an information and Informed consent form prior to participating. All methods were carried out in accordance with relevant guidelines and regulations such as the Declaration of Helsinki.

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## Data availability statement

The dataset(s) supporting the conclusions of this article is(are) included within the article (and its additional file(s)).

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