

Telemedicine and Older Neurology Outpatients: Use of NHS Direct and of the Internet in the UK



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ABSTRACT

Telemedicine is one potential approach to address the underserved health needs of older people. This article presents data from a project investigating neurology patients' awareness and use of the NHS Direct telephone helpline and the Internet over a 10-year period (2001–2010). Older people's awareness and use of the NHS Direct telephone helpline was low compared to other age groups and did not change with time. Although Internet access and use was also low compared to other age groups, access did increase over time. Hence, future generations of older people may be amenable to health contacts and inputs via cyberspace.

Keywords: telemedicine, teleneurology, NHS Direct, Internet

INTRODUCTION

The health needs of older people are recognised to be underserved. One potential approach to this shortfall may be the delivery of health advice, diagnosis, and treatment to older people via telephone helplines or the Internet. Such medicine at a distance, literally telemedicine, has a long history as a modality of care, but the means of connectivity have changed with the evolution of new enabling technologies such as telephone helplines and the Internet.⁽¹⁾

One example, from the United Kingdom (UK), is a national medical telephone helpline named NHS Direct, which was developed under the auspices of the National Health Service. Launched in the spring of 1998 in selected areas of England, it was gradually rolled out to the whole of the UK by the end of 2000, with the aim of disseminating health information and advice to support patient self-care and appropriate self-referral without recourse to a doctor.^(2,3) Since more than 90% of UK households have telephone access, this provision might reach otherwise disenfranchised older people.

Likewise, increasing numbers of UK households now have Internet access, some 77% by August 2011.⁽⁴⁾ The Internet has been described as one of the key technological revolutions of our age,⁽⁵⁾ one use of which is as a vast resource

of medical information available not only to medical practitioners but also to patients.

Rather little information is currently available as to the use older people make of such telemedicine services. In a survey of 207 patients questioned in general practitioner waiting rooms, Ullah *et al.* found NHS Direct use declined significantly with patient age, and that even among those aware of the service “older people” (not further defined) were less likely to use it.⁽⁶⁾ David, using a postal questionnaire to patients aged 70 and older, found that just over 50% of 312 respondents had heard of NHS Direct but only 5% had used it.⁽⁷⁾ Both these studies were point measurements in time.

As for the Internet, its use amongst older Australians was found to be primarily for personal communication, but also for information seeking, commerce, and entertainment,⁽⁸⁾ findings which probably apply also in the UK.⁽⁴⁾ In an American study of over six thousand respondents aged between 63 and 66 years, one-third had searched online for information about their own health or health care, with years of education and “openness-to-experience” being positively associated with online searching for health information.⁽⁹⁾

Uncertainty remains as to what use older people make of these new telemedical resources.

OBJECTIVES

The objectives of this pragmatic study were to examine both awareness and use made of both the NHS Direct telephone helpline and of the Internet by older people over a period of 10 years, and to compare these frequencies with other age groups.

METHODS

Data from a study examining the evolving field of teleneurology,⁽¹⁰⁾ based in secondary care, were analysed. Consecutive new patient referrals to neurology outpatient clinics in two district general hospitals in northwest England were surveyed in the months of January to March in each year from 2002–2010 inclusive (NHS Direct study) and 2001–2010 inclusive (Internet study). Patients were asked about their awareness

and use of NHS Direct and of the Internet prior to referral. This study used the same methodology as previous reports examining the relevance of NHS Direct and the Internet to neurology outpatients,^(11,12) but extended the duration and looked specifically at older patients. Standard statistical methods (χ^2 test) were used to examine null hypotheses that proportions were the same in the cohorts being compared (equivalence hypothesis), with $p < 0.05$ considered significant for rejection of the null hypothesis.

RESULTS

NHS Direct

Analysing the whole 2002–2010 patient cohort ($N = 1,973$) over time, there was a small year-by-year increase in the cumulative summed frequency of patients reporting NHS Direct awareness between 2003 (51.9%) and 2010 (62.5%, $\chi^2 = 34.0$, $df = 8$, $p < 0.001$).

All patient use of NHS Direct for medical information or advice showed a steady increase in cumulative summed frequency from 26.0% of those aware in 2003 to 32.8% in 2010 ($\chi^2 = 66.6$, $df = 8$, $p < 0.001$).

NHS Direct awareness and use varied with patient age (Table 1, Figure 1). In the over-70-years age group ($n = 191$), proportional awareness of NHS Direct (47.6%) was next to lowest, the exception being the 16–20 age group. NHS Direct use by the over-70-years age group, both as a proportion of total number (6.8%) and of those aware (14.3%), was the lowest recorded.

Examining awareness of NHS Direct by patient age over time, in the over-70-years age group ($n = 191$), there was no significant change in awareness of NHS direct in each year ($\chi^2 = 13.5$, $df = 8$, $p > 0.05$).

Older patient use of NHS Direct for medical information or advice over time showed no significant change ($\chi^2 = 6.4$, $df = 8$, $p > 0.05$).

Internet

Analysing the whole 2001–2010 cohort ($N = 2171$) over time, there was a small year-by-year increase in the cumulative summed frequency of patients reporting Internet access between 2002 (35.7%) and 2010 (51.5%, $\chi^2 = 143.3$, $df = 9$, $p < 0.001$).

All patient use of the Internet for medical information or advice showed a steady increase in cumulative summed frequency from 24.7% of those with access (2002) to 30.0% (2010, $\chi^2 = 53.6$, $df = 9$, $p < 0.001$).

Internet access and use varied with patient age (Table 2, Figure 2). In the over-70-years age group ($n = 213$), proportional access to the Internet (19.7%) was the lowest recorded. Internet use by the over-70-years age group as a proportion of the total number (3.8%) was also the lowest recorded, with no over-80-years age group using the Internet to search for medical

TABLE 1.

Awareness and use of NHS Direct by patient age, general neurology outpatient clinics, 2002–2010

Age (years)	N (% of T)	Aware (% of N)	Used (% of N; % of Aware)
16-20*	106 (5.4)	43 (40.6)	11 (10.4; 25.6)
21-30	260 (13.2)	168 (64.6)	78 (30.0; 46.4)
31-40	361 (18.3)	260 (72.0)	128 (35.5; 49.2)
41-50	426 (21.6)	277 (65.0)	102 (23.9; 36.8)
51-60	351 (17.8)	228 (65.0)	37 (10.5; 16.2)
61-70	278 (14.1)	166 (59.7)	36 (12.9; 21.7)
≥71	191 (9.7)	91 (47.6)	13 (6.8; 14.3)
Total (T)	1973	1233 (62.5)	405 (20.5; 32.8)

*Lower age limit of adult neurology outpatient clinics is 16 years.

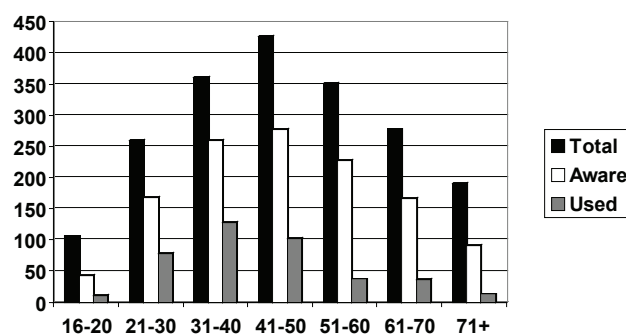


FIGURE 1. NHS Direct: Patient awareness and use by age group, 2002–2010

information, and as a proportion of those with Internet access (19.0%) was second lowest, next to the 61–70 age group.

Examining access to the Internet by patient age over time, in the over-70-years age group ($n = 213$), there was a significant difference in the proportion of patients with access to the Internet over time ($\chi^2 = 22.3$, $df = 9$, $p < 0.01$).

Older patient use of the Internet for medical information or advice showed no significant difference over time ($\chi^2 = 8.4$, $df = 9$, $p > 0.1$).

DISCUSSION

These data show that older people are currently the population group least likely to utilise NHS Direct and the Internet

TABLE 2.
Access and use of Internet by patient age, general neurology
outpatient clinics, 2001–2010

Age	N (% of T)	Access (% of N)	Used (% of N; % of Access)
16-20*	122 (5.6)	78 (64.0)	15 (12.3; 19.2)
21-30	282 (13.0)	162 (57.4)	61 (21.6; 37.7)
31-40	406 (18.7)	255 (62.8)	91 (22.4; 35.7)
41-50	466 (21.5)	289 (62.0)	93 (20.0; 32.2)
51-60	377 (17.4)	183 (48.5)	47 (12.5; 25.7)
61-70	305 (14.0)	108 (35.4)	20 (6.6; 18.5)
≥71	213 (9.8)	42 (19.7)	8 (3.8; 19.0)
Total (T)	2171	1117 (51.5)	335 (15.4; 30.0)

* Lower age limit of adult neurology outpatient clinics is 16 years.

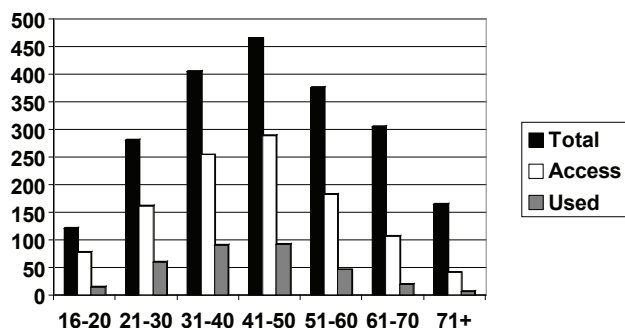


FIGURE 2. Internet: Patient access and use by age group, 2001–2010

for health care purposes. Although the patient numbers in this study were relatively small in comparison to the overall number of callers to NHS Direct and with Internet access—and hence were subject to sampling error—nonetheless, they give a picture of the current situation. The figures for NHS Direct awareness and use in older people (47.6% and 6.8%, respectively) were almost identical to those in a prior study of patients aged ≥ 70 years (53.2% and 5.4%, respectively),⁽⁶⁾ with no evidence for increasing awareness or use over a time period of nine years. Likewise, Internet access and use in older people lagged behind other age groups, although access did increase over time, concordant with data showing increased Internet access in all age segments of the UK population.⁽⁴⁾ However, older people's use of the Internet for medical information did not change over time.

These data, therefore, suggest that there may be barriers to older people's use of these modalities of health

information. There may be many reasons for these findings. Older people may have difficulty in adapting to unfamiliar technologies, perhaps related to financial constraints which drive a “digital divide” between older and younger age groups. Psychological barriers to use, such as perceptions of usefulness, ease of use, and efficacy, were shown in an empirical study of Internet use in older people.⁽¹³⁾ In a US focus group study, older people who did not use the Internet were found to be just as satisfied with the health information they found from traditional sources as those who searched for information online, despite (or perhaps because of) the fact that the Internet users had access to more information.⁽¹⁴⁾ Levels of prior education and “openness-to-experience”, and presence of developing cognitive inefficiency or decline, or any combination of these factors, may also limit awareness or use. Many of these barriers might potentially be overcome with appropriate training. Sensory impairments, especially of hearing and vision, may affect adoption of both computer and telephone-based technological advances.

Some of these existing barriers to use of telemedicine modalities by older people may be only temporary. With the ageing of the population, the situation may well change, as suggested, for example, by the data for the 61–70 year age group shown in Tables 1 and 2. The Internet, in particular, may possibly become a viable way to address older people's health needs.

Telemedicine services may also be relevant when used on behalf of older people. Surveys of patients and their relatives and care-givers attending cognitive disorders clinics, predominantly with Alzheimer's disease, have shown high levels of Internet access and use, around 50%, to search for relevant information once diagnosis was established.^(15,16)

CONFLICT OF INTEREST DISCLOSURES

The author declares that no conflicts of interest exist.

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