How do teenagers and primary healthcare providers view each other? An overview of key themes

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SUMMARY

Background: *Teenagers have often been asked for their opinions about health services. However, relatively few studies have involved quantitative and qualitative methods of assessing them. Furthermore, there have been no United Kingdom studies of providers' views on the health of teenagers or of providers' opinions about their role in teenage health.*

Aim: *To determine how teenagers view primary care, to discover how primary care providers view teenage patients, and to note any differences in opinions between the two groups.*

Design of study: *Questionnaire survey, focus group discussions, and semi-structured interviews.*

Setting: *Two thousand two hundred and sixty-five teenage patients, 16 general practitioners (GPs), 12 practice nurses, and 12 general practice receptionists in South Wales valley communities.*

Method: *Selected practices provided age–sex registers of patients aged between 14 and 18 years and questionnaires were sent to these patients. Focus groups were assembled from those teenagers who had completed and returned the questionnaire. Semi-structured interviews between one member of the study team and GP surgery staff, chosen randomly from staff lists in the selected surgeries.*

Results: *The teenagers reported a lack of knowledge of services available from primary care, a feeling of a lack of respect for teenage health concerns, poor communication skills in GPs, and a poor understanding of confidentiality issues. The providers did not always share these concerns and they also had differing views on communication and confidentiality issues.*

Conclusion: *The data demonstrated important findings about how teenagers would like primary care services to be improved. There was an apparent gulf between teenagers' own opinions about health care and the opinions held by primary care providers.*

Keywords: *adolescent health; attitude of health personnel; confidentiality; patient satisfaction.*

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Introduction

TEENAGERS are often regarded as healthy people who are infrequent users of primary care services, and who have only minor illnesses.[1-4] However, there are issues that may be particularly relevant to their health care. For example, providers may view teenagers as difficult patients.[5] Furthermore, consultations with teenagers may be perceived as presenting an opportunity to make up time in late-running surgeries.[6] Teenagers themselves report a range of health concerns and would welcome the opportunity to discuss these in more detail with health professionals.[7] Lastly, psychiatric disorders in teenagers are common.[8]

Teenagers have commented on United Kingdom (UK) health services in questionnaire-based studies. Most comments are about communication, access, confidentiality issues, and waiting room arrangements.[1,2,7,9-14] A review article on patient satisfaction confirmed that younger patients report more dissatisfaction than older age groups.[15] There appears to be a need for continuing study, which would benefit from a more pluralistic methodology.

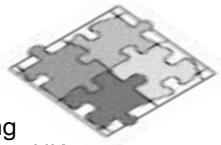
There are no UK studies of primary care providers' opinions on teenagers and their health, although there are studies from the United States (US) and Australia. In one US study physicians and nurses reported deficiencies in knowledge that varied across professional groupings.[16] A second US study showed that paediatricians providing ambulatory care (referred to as primary care in the UK) were uncomfortable with granting confidentiality rights to teenagers, particularly those aged between 13 and 15 years.[17] In Australia, a qualitative study of GPs in the state of Victoria reported that issues of communication and confidentiality were paramount.[18] The same team performed a larger survey and suggested formal training for medical undergraduates and postgraduate GP trainees.[19]

All of the above has suggested a need to investigate UK primary care providers' attitudes, knowledge, awareness, and opinions of teenage healthcare issues. Furthermore, UK teenagers need more opportunity to discuss their health needs, knowledge, opinions of health care, and suggestions for service improvements. These needs are the basis of this present study.

Methods

It was decided to adopt a pluralistic approach involving quantitative and qualitative methods. All 62 practices in the four sub-districts of Northern Bro Taf (South Wales valley communities) were notified of the study by newsletter, and comprised the initial sampling frame. The local ethics committee supported the project throughout.

HOW THIS FITS IN



What do we know?

We know that teenagers report difficulties in accessing and using primary care services. We have no UK data on primary care providers' views of teenagers.

What does this paper add?

This paper uses qualitative and quantitative methods to delineate teenagers' opinions of their primary health care.

A 50% sample of practices in each of the four sub-districts, stratified by practice size, was chosen. Practices were divided into three groups for stratification purposes, comprising of single-handed, two-partner, and larger practices. Selected practices were asked to provide an age–sex register of patients aged between 14 and 18 years, to enable a 25% sample of teenagers in each practice to be surveyed, using a postal questionnaire initially. Questionnaires were sent to the parents of teenagers aged 14 and 15 years, with a covering letter requesting the teenager to complete and return the questionnaire in a prepaid envelope. For teenagers aged 16 years and over, the questionnaires and covering letters were sent to the teenager directly.

The questionnaire was designed by the research team, and piloted away from the study population. It was eight pages long, with 29 questions, and it took about 20 minutes to complete. There was room to elaborate on some of the responses. The questionnaire pro forma indicated that interested participants could take part in a further section of the study, which would involve group discussions. Data analysis from the questionnaire was completed first and preceded the recruitment of focus groups.

Focus groups were assembled from those teenagers who had completed and returned the questionnaire. The intention was to recruit 16 focus groups, with four groups in each of the four sub-districts. Each sub-district was to provide a group of 'younger' males, and a group of 'younger' females, i.e. between the ages of 14 and 15 years. There was also to be an 'older' group of males, and an 'older' group of females, i.e. between 16 and 18 years.

Discussions were to be facilitated by two members of the study team. An *aide mémoire* was developed from the 'free-text' responses to an item in the questionnaire survey that asked for comments on individual teenagers' general experiences on their most recent visit to their GP. This *aide mémoire* was to be used to assist in discussion, but only if the group required some input from the facilitators; otherwise the teenagers themselves were to lead the discussions. The recruited teenagers were to receive no information prior to the focus group meetings, other than a statement that the meetings were intended to promote discussion of teenage health in some detail in a group setting.

A third phase was to involve 40 semi-structured interviews between one member of the study team and members of GP surgeries. There were to be interviews with 16 GPs, 12 practice nurses and 12 receptionists. Individuals were to be chosen randomly from staff lists in the selected surgeries. Participants were not informed of any data provided by the teenagers involved in the study prior to or during the interview.

Results

Response rates

Four practices declined to take part, but were replaced from further random selections of appropriate practices. A total of 2265 teenagers received the questionnaire. Non-responders also received a single reminder questionnaire if they did not reply initially. Overall, there was a 49.7% response rate (1082 teenagers). Fifty-seven per cent of the responders were female. There were proportionally more younger responders, aged between 14 and 16 years, and nearly 85% were still at school or college.

The 1082 responders were invited to take part in the focus groups. There were 397 replies, with only 69 indicating a willingness to take part. When given specific dates, 37 confirmed availability. Thirty-one teenagers (22 females and nine males) attended six focus groups. The focus groups were divided according to age and sex, resulting in four female groups and two male groups.

All 40 intended provider interviews took place, although some took many months to conduct owing to providers' pressure of work.

Themes emerging

The data is presented according to themes emerging from the datasets, from the patients' perspective. Clearly, there is some overlap; however, the intention is to provide an overview of the key emerging themes.

Visiting the surgery

Most responders to the questionnaire considered the receptionists approachable, although significantly few of these were female. In contrast, a key theme emerging from the focus groups was the difficulty of access to primary care. The main issues concerned making appointments and interaction with the surgery receptionists. The following excerpt from a young female group indicates apprehension about negotiating appointments with the receptionist, and possible negative consequences:

> *'She wants to know everything … is there a need to see the doctor because he's busy and things like that … as if you're bothering them.'* (First teenager.)
>
> *'Yeah, disturbing them.'* (Second teenager.)
>
> *'No point in going down there if you're going to get a response like that.'* (First teenager.)

Status as a patient

A common theme for the focus groups was that teenagers did not feel as respected as other patients, and were liable to be treated like children. An older female made this point succinctly:

> *'Doctors treat teenagers as if we're not capable of knowing what's wrong with us.'*

There was also a perception that receptionists view teenagers as troublemakers and members of a stereotypical youth group. This may influence their interaction with health service providers, as demonstrated by the following comment about receptionists:

'They got a picture of you and what's wrong with you … they don't listen to what you say.'

In their interviews, most receptionists were aware of the reaction of older patients to the stereotypical 'youth problem'. Interestingly, this was mirrored by reactions of younger receptionists, who had greater empathy with the problems faced by teenagers coming to surgery, although two were aware that time in the surgery had given them or their colleagues a narrow view of teenagers.

In contrast, GPs were more divided, with some seeing teenagers as 'rational kids' and some seeing them solely in terms of their indulgence in risk behaviour. Many GPs shared a positive view of teenagers, wanting to see them as mentally competent individuals, whereas others had negative opinions and wanted a 'back to basics' approach to management of teenage health issues, such as drugs and teenage pregnancy.

The waiting room

One of the items on the questionnaire asked: 'How relaxed and at ease do you feel when you visit the GP?' Seventy-five per cent were 'fairly' or 'very' relaxed, and significantly more of these were males than females. 'Relaxed' responses were associated with such features as positive atmosphere and surroundings, while 'not relaxed' responses were associated with boredom in the waiting room and perceptions of being stared at. The focus groups confirmed a feeling of discomfort in the waiting room, with participants perceiving that they were objects of interest for other patients.

Receptionists reported their impression that many teenagers can be awkward if they attend the practice about personal problems, or if they do not know the surroundings. There was a clear perception that teenagers can be anxious on their own while waiting in the waiting room. This theme did not emerge in the interviews with the nurses or GPs.

Members of the primary care team

Receptionists are aware of how the public perceive them. They recognised a receptionist stereotype:

'It's the old dragon syndrome that teenagers are wary of … we're seen sometimes as the old battleaxe at the desk who won't let them see the doctor.'

Nurses see themselves as being mother figures, and their perception is that teenagers would prefer to see a female nurse rather than a male GP. Furthermore, they report that they are more approachable than doctors, and they frequently mentioned a 'white coat syndrome' in relation to the more authoritarian doctors. However, the questionnaire data showed that over one-third of responders (34%) had not visited the practice nurse at all.

In contrast, many GPs expressed concern at the apparent lack of parental involvement in the health of their teenage patients, and felt that they had to provide support themselves. They recognised that, of necessity, this may involve compromising their own personal beliefs and opinions and some felt uncomfortable at being placed in such a position.

Communication

This was a common theme in the study. The questionnaire included the question: 'How relaxed do you feel when talking to your doctor?' Seventy per cent of responders were 'fairly' or 'very' relaxed, and significantly more of these were males than females. 'Relaxed' responses were associated with such features as a friendly, approachable GP who is caring, interested, and who listens. 'Not relaxed' responses were associated with a patronising, judgmental, 'superior' GP who does not listen, and also with personal feelings of unease. Sometimes females reported unease at seeing male GPs.

One of the questionnaire items asked the teenagers about time spent consulting the doctor. Thirty-three per cent of questionnaire responders reported consultations of under five minutes with the doctor, and another 58% reported consultations of under 10 minutes. Twenty-one per cent reported that this was not enough time; these were mostly those in the under-five minutes category. There was a particularly significant association with a question on overall satisfaction with care.

The focus groups continued this theme and described an inequality of status with the doctor, who was seen as an authority figure who communicated briskly. The following transcript from a group of older females illustrates this:

'I feel like I'm talking to a teacher.' (First teenager.)

'I'm really intimidated when I go to my doctor … I sit there, "Yes doctor, no doctor" .' (Second teenager.)

'You got to put on such an act and you're only in there five minutes.' (Third teenager.)

'You think they're going to lecture you … it's the tone of voice … talking down to you.' (Fourth teenager.)

The groups appeared to value those doctors who allowed them time to overcome their initial fears and gain confidence to voice their concerns. They were aware of the workload of their GPs, but felt that their ability to communicate was compromised by a lack of time with the doctor.

For many groups, there was a crucial problem of a lack of understanding of the teenage agenda and the problems they face. This aspect of communication can be summed up by an older female:

'It's not that he doesn't listen … sometimes he doesn't fully comprehend that he's talking in a way you can't understand … it would help if they talked to teenagers.'

The interviews with the receptionists indicated an understanding of communication as an issue in the context of their role as 'gatekeeper' to the surgery. One was particularly

aware of communication as an issue within this context:

'I think being pleasant and trying to speak to them … giving them more time, makes them more relaxed because they are obviously a bit worked up sometimes when they come in.'

Nurses reported issues related to communication, although there were differences of opinion. Some reported that teenagers are easy to deal with, whereas others reported communication problems and a need for specific communication skills:

'… need to read between the lines to find out what they really want and need.'

Doctors also reported that effective communication is paramount. However, they tended to take the view that successful communication occurs in a consultation in which a teenager is respectful and actively listens to the GP. Some recognise that consulting with teenagers requires time and encouragement to get them to talk and express themselves. Some recognise that the nature of the role militates against easy communication. A minority comment was that teenagers were not difficult to talk to, but were instead rather demanding:

'They're not frightened of doctors … they know what they want and they just expect me to give it to them.'

Confidentiality

This was included in the questionnaire in relation to receptionists and practice nurses. Fourteen per cent of responders reported that receptionists asked why the teenager wanted to see the doctor; if they did the teenager was more likely to view this as a breach of confidentiality. A large proportion of those who had seen nurses reported their respect for confidentiality (over 60%), although 30% were unclear whether or not they did respect confidentiality.

Confidentiality was a source of concern for the female groups but was afforded little importance by the male groups. The following quote from a female group illustrates typical female disquiet on this issue:

'Teenagers know that a doctor is confidential, in that the service is confidential, but individually they still worry about the doctor telling their parent.'

One concern closely allied to confidentiality was that teenage girls thought that they might be recognised in the surgery and their visit reported to their parents by this third party. The following excerpt illustrates this issue of 'community confidentiality':

'… receptionists asked why she wanted to see the doctor … in the waiting room was one of her mother's friends … quite embarrassing for her.'

The questionnaire demonstrated support for a teenage clinic situated away from the GP surgery. Interestingly, community confidentiality was mentioned as a cause for concern in any potential teenage clinic, because the female groups recognised that they might be seen going there by friends, family or friends of their parents.

Receptionists seemed to be aware of community confidentiality:

'I suppose the only thing they might worry about is knowing people when they come in.'

Nurses showed an awareness of a need for privacy, confidentiality, and community confidentiality in trying to avoid parents finding out about any meetings. There was some confusion about whether to inform GPs about problematic consultations if there was a source of concern. A number of nurses reported that they would inform a teenager prior to information disclosure.

GPs frequently mentioned confidentiality as a concern for teenagers, and many felt that teenagers were unaware that consultations are confidential. They were unanimous in their agreement that this was true for all patients aged 16 years and over. However, for younger patients there were some who reported a surgery policy that patients had to be accompanied by an older relative. Furthermore, there were some who reported that they might inform relatives of a visit to the surgery by a teenager aged under 16 years. Some GPs did recognise that teenagers might be concerned about being seen in surgery by people they knew.

Information and training

A full-page section of the questionnaire asked about teenagers' knowledge of the potential services available from primary care. The results demonstrate uncertainty about the services available, especially with regard to advice on smoking (31% were unsure), emotional problems (40%), counselling (54%), and emergency contraception (38%).

Twenty per cent of questionnaire responders reported that they had received advice on their lifestyle, and significantly more of these were older, female teenagers. In contrast, 85% indicated they were happy to receive advice. In the focus groups, there was general agreement that they should be able to get advice from their GP about their concerns and worries. It was suggested that this should be given in an impartial, non-judgmental manner, with a common caveat that this should be provided only if requested.

A second issue related to the provision of health information. The participants in the female groups expressed a feeling that there was insufficient information available about health, and suggested the use of leaflets as an effective means of providing information, although again the issue of community confidentiality emerged. In comparison, the participants in the male groups felt that there was adequate information already if individuals wanted to access it. The role of the school was frequently discussed, with many negative comments on the information provided on health issues.

All of the health providers commented that more training might be helpful. For nurses and receptionists this mostly revolved around communication, whereas many GPs focused on health problems, such as pregnancy, drugs or HIV, although some indicated they might benefit from more

training in communication skills and counselling.

Overall care

The questionnaire culminated in the teenagers assessing the overall care package provided by their respective surgeries. Overall, 88% indicated that they were 'fairly' or 'very' happy with the health care they receive, and the remaining 12% indicated they were 'fairly' or 'very' unhappy.

All groups were asked to comment on their ideal doctor and surgery. The mood of the groups can best be summed up in the following quote from an older female:

> *'I think it would be a good idea if a few doctors got together and had a group like this … they'd know our opinion … we'd not be telling them how to do their job.'*

The interviews with primary care providers did not reveal many suggestions for improvements to be made by receptionists or nurses. However, GPs were in general agreement that teenagers themselves need more information and education about aspects of general practice services, such as patient rights, basic health, and confidentiality.

Conclusion

Methodology

The pluralistic approach provided a wide range of data, and the design illustrated several methodological issues. First, the study demonstrated the limitations of using questionnaires as the only research tools. Secondly, the focus groups were helpful in finding teenagers' own agendas and elaborating on some of the themes evident from the questionnaire data. Lastly, the interviews with providers allowed information to be obtained face to face and for their views to be represented.

To illustrate the first two points, questionnaire data alone would suggest that 12% of the responding teenagers surveyed were unhappy with the care they received. Focus group data showed some of the elements that may contribute to this reported dissatisfaction. This combined approach demonstrated the need to go beyond the purely quantitative responses to questionnaire surveys and change the thinking that informs the provision of services for teenagers within primary care.[20]

The response rates to the questionnaire were lower than expected, but were still acceptable considering the age group involved.[15] A large proportion of responders were still at school or college, and this may reflect a bias in the responses that may fail to reflect high levels of local unemployment. The numbers involved in the focus groups were lower than anticipated in the original design, and clearly this is an important methodological consideration for future studies. A further methodological issue is the persistence needed when trying to interview busy healthcare providers.

Commentary

It will be implicit in this section that the data comes from a series of tightly knit South Wales valley communities, which may have implications for generalisability. However, a strength of this study is that it provided the opinions of a group of primary healthcare professionals and a group of teenagers who are also their patients and, as such, is the first study of its kind.

Many teenagers reported apprehension about making appointments with primary care professionals. They expressed a reluctance to approach reception staff, a lack of perceived respect from the surgery team, and a perception of being stereotyped. Teenagers noted that community confidentiality was important and applies to any services within a community. Primary care team members were sometimes aware of this and tried to lessen its impact. This theme has not been reported before, and appears specific to health care for this age group.

Confidentiality itself was a frequent source of concern. Many teenagers were unsure of the implications in relation to surgery staff. The issue has been reported as a concern before, but not with such clarity.[5,6,9,12] Furthermore, this study shows confusion among health professionals about the concept of competence for younger teenagers following the Gillick ruling.[21]

A further theme was communication. Previous studies report that teenagers often feel uncomfortable in surgeries.[5,9,12] This study confirms this, although questionnaire data initially suggest that most teenagers are broadly satisfied with their primary care services. In contrast, the focus group discussions demonstrated strongly held views about primary care and poor communication; to date no other study has used focus group methodology to describe this concern. Communication as an issue is important for this age group, but that is also applicable to patients of all ages.

Many teenagers would prefer to have more time with the doctor, and the issue of short consultations has been noted before.[22] In addition, females would often prefer to see a female GP; and this confirms data previously reported from New Zealand.[23] Practice nurses and some female GPs were aware of this trend, although the questionnaire data in relation to practice nurses further confirms that they may be an underused resource.[24]

The data demonstrates that health professionals are more concerned about 'public health' issues (such as teenage pregnancy and drug use), which is similar to previously reported information.[1,2,5-7] This may reflect a difference in terms of status within the consultation, and it suggested a degree of stereotyping, itself making some teenagers resentful of this comparison with others of the same age. The health professionals alluded to this theme at times, but were largely more concerned about meeting their own health agenda.

The importance of training in teenage issues emerged in one focus group. Primary care providers sometimes expressed a wish for more basic knowledge of modern health problems, but communication also emerged as an issue. These findings are similar to data reported in the US and Australia.[16-19] Recent Australian research has suggested that training is effective in improving competence in dealing with adolescents.[25]

Likewise, many healthcare providers have reflected that teenagers need the provision of more information on health service and health issues. The questionnaire data confirms an apparent paucity of information available to teenagers on

the role and function of primary health care, and it is important to consider how to meet this requirement.

References

1. Bewley BR, Higgs RH, Jones A. Adolescent patients in an inner London general practice: their attitudes to illness and health care. *J R Coll Gen Pract* 1984; **34:** 543-546.
2. Macfarlane A, McPherson A, McPherson K, Ahmed L. Teenagers and their health. *Arch Dis Child* 1987; **62:** 1125-1129.
3. Jacobson LD, Owen PA. Study of teenage care in one general practice. *Br J Gen Pract* 1993; **43:** 349.
4. Royal College of General Practitioners, Office of Population Censuses and Surveys, and Department of Health. *Morbidity statistics from general practice: 4th National study. 1991-1992*. London: HMSO, 1995.
5. Jacobson LD, Wilkinson CE. Review of teenage health: time for a new direction. *Br J Gen Pract* 1994; **44:** 420-424.
6. Melville A. Caring for adolescents. *Fam Pract* 1989; **6:** 245-246.
7. Epstein R, Rice P, Wallace P. Teenagers' health concerns: implications for primary health professionals. *J R Coll Gen Pract* 1989; **39:** 247-249.
8. Kramer T, Garralda E. Psychiatric disorders in adolescents in primary care. *Br J Psychiatry* 1998; **173:** 508-513.
9. Jacobson L, Wilkinson C, Pill R, Hackett P. Communication between teenagers and British general practitioners: A preliminary study of the teenage perspective. *Ambulatory Child Health* 1996; **1:** 291-301.
10. McPherson A, Macfarlane A, Allen J. What do young people want from their GP? *Br J Gen Pract* 1996; **46:** 627.
11. Kari J, Donovan C, Li J, Taylor B. Adolescents' attitudes to general practice in north London. *Br J Gen Pract* 1997; **47:** 109-110.
12. Donovan C, Mellanby AR, Jacobson LD, *et al*. Teenagers' views on the general practice consultation and provision of contraception. The Adolescent Working Group. *Br J Gen Pract* 1997; **47:** 715-718.
13. Jones R, Finlay F, Simpson N, Kreitman T. How can adolescents' health needs and concerns best be met? *Br J Gen Pract* 1997; **47:** 631-634.
14. Davies L, Casey S. The adolescent view of accessing health services. *Br J Gen Pract* 1999; **49:** 486-487.
15. Rees Lewis J. Patient views on quality in general practice: literature review. *Soc Sci Med* 1994; **39:** 655-670.
16. Blum R, Bearinger L. Knowledge and attitudes of health professionals toward adolescent health care. *J Adolesc Health* 1990; **11:** 289-294.
17. Fleming G, O' Connor K, Sanders J. Paediatricians' views of access to health services for adolescents. *J Adolesc Health* 1994; **15:** 473-478.
18. Veit F, Sanci L, Young D, Bowes G. Adolescent health care: perspectives of Victorian general practitioners. *Med J Aust* 1995; **163:** 16-18.
19. Veit F, Sanci L, Young D, Bowes G. Barriers to effective health care for adolescents. *Med J Aust* 1996; **163:** 131-133.
20. Pope C, Mays N. Opening the black box: an encounter in the corridors of health services research. *BMJ* 1993; **306:** 315-318.
21. Pickersgill D (ed). *The law and general practice.* Oxford: Radcliffe Medical Press, 1992.
22. Jacobson LD, Wilkinson C, Owen PA. Is the potential of teenage consultations being missed? A study of consultation times in primary care. *Fam Pract* 1994; **11:** 296-299.
23. Murdoch JC, Silva P. The use of general practice services by 18 year olds in New Zealand. *N Z Med J* 1996; **109:** 113-115.
24. Gregg R, Freeth D, Blackie C. Teenage health and the practice nurse: choice and opportunity for both? *Br J Gen Pract* 1998; **48:** 909-910.
25. Sanci L, Coffey C, Veit FC, *et al.* Evaluation of the effectiveness of an educational intervention for general practitioners in adolescent health care: randomised controlled trial. *BMJ* 2000; **320:** 224-230.

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