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Tackling child health inequalities due to deprivation: using health equity audit to improve and monitor access to a community paediatric service

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Abstract

Background Deprived children constitute a large population with high levels of ill health, and difficulty with access to healthcare contributes to their poor health outcomes. There is debate on how best to engage deprived families and the literature on differential access to paediatric care based on deprivation is limited.

Aims

1 To demonstrate that community paediatrics can contribute to reduction of health inequalities by providing services that are accessible to and preferentially used by children whose health is likely to be affected by deprivation.
2 To provide a template for others to improve and monitor equity in their services.

Method Long-term service reconfiguration and health equity audit. We used routinely collected activity data and the Indices of Multiple Deprivation to construct equity profiles of the children using our service, and compared these with the profile of the population aged 0–16 years in the geographical area covered by the service.

Results The new patient contact rate for the most deprived children in the population was more than three times that of the least deprived [odds ratio (OR) 3.29, 95% confidence interval (CI) 2.76–3.93]. Deprived children were more than twice as likely to require multi-agency meetings as part of their medical care (OR 2.28, 95% CI 1.94–2.69). Seventy per cent (3693/5312) of our total contacts were with children in the two most deprived quintiles. There was a marked socio-economic gradient in all types of contact.

Conclusions The model of care used by our community paediatric service successfully engages deprived families, thereby reducing health inequalities due to poor access. Key features are multi-agency working, removing barriers to access, raising staff awareness and use of health equity audit. Our findings provide support for tackling health inequalities via health services that are available to all, but capable of responding proportionately according to level of need, a model recently described as proportionate universalism.

Introduction

Deprived children constitute a large population with high levels of ill health. The prevalence of long-standing illness in the most deprived children is 1.4 times greater than that in the least deprived (National Centre for Social Research and Department for Work and Pensions 2006). It is likely that this excess of illness is directly attributable to the effects of deprivation.

Socio-economic status is one of the most important determinants of child health. A review by Reading demonstrated that virtually all aspects of child health are adversely affected by poverty and that 'the difference in health between poor and well off children poses a substantial public health problem' (Reading 1997). In Britain over 2.8 million children live in poverty (Department for Work and Pensions UK 2006a).

Since the late 1990s the UK government has been making efforts to reduce child poverty, and some of the indicators of childhood deprivation are now improving (Reading 1997). However there is evidence that health outcomes for the most deprived children are getting worse (Department for Work and Pensions UK 2006b) and that vulnerable groups are still having difficulty accessing services (Dixon-Woods *et al.* 2005).

Ensuring that deprived children have equitable access to healthcare is a central theme in reduction of health inequalities but there is little evidence as to the best way of achieving this. Some well-intentioned services targeted specifically at deprived areas have not succeeded and have resulted in decreased access and worsening of inequalities for the most deprived children (Roberts 2000; Love *et al.* 2004; The National Evaluation of Sure Start Team 2005; Belsky *et al.* 2006). This may be because families find these services stigmatizing (Roberts 2000). There has been debate on whether health inequalities due to deprivation should be tackled by improving the services that are available to all, or by targeted programmes (Smith 2001). The Strategic Review of Health Inequalities in England (Marmot 2010) concluded that focusing solely on the most disadvantaged will not reduce inequalities sufficiently and that action is needed across the social distribution.

The community paediatric service in Derby provides specialist paediatric care to a large and diverse population. One of our main service objectives is to contribute to reduction of health inequalities by providing a service that is accessible to and used by children whose health is likely to be affected by deprivation, and we have achieved this by service redesign and careful measurement of equity profiles. In this paper we describe the key features of our model of care and the way in which we use health equity audit to monitor and improve the quality of our service.

Methods

Setting

We studied a community paediatric service that provides specialist care for a population of approximately 120 000 children aged 0–16 years in Derby City and the southern part of Derbyshire County. The service covers a diverse geographical area that includes urban areas with high levels of deprivation alongside areas of extreme rural deprivation. The population is deprived compared with the rest of England, with Derby City being ranked 69th most deprived and Derbyshire County 91st most deprived of the 354 wards in England [The English Indices of Deprivation (Revised) 2004].

Model of care

The Derby community paediatric service was comprehensively re-engineered during the 1990s from a routine school health service with no consultants, seeing mostly normal children, to a highly specialized consultant-led secondary care service with expertise in disability, development, child protection, child mental health, adolescent health, children in care and population paediatrics. Key features of the new service model are multi-agency working, accessibility, holistic assessment, comprehensive provision of services, and the fact that the service is available to all but able to respond proportionately to children with higher levels of need. The need for service evaluation based on robust data was recognized and, in the absence of a national data collection system, the Derby community paediatric data collection system was created *de nov*o by the clinicians within the service.

Multi-agency working

Our service has a strong ethos of multi-agency working. Most unusually for a specialist health service, 50% of our referrals come from agencies outside of Health, including Education, Social Care, Police, and voluntary agencies. Much of our multi-agency working is centred on deprived children as evidenced by the fact that 75% of our multi-agency network meetings are around children in the two most deprived quintiles. Multi-agency working has been shown to be an effective way of supporting children and young people and producing improved outcomes (Sloper 2004). It is a central theme of the UK cross government programme for improving outcomes for children, Every Child Matters (HM Government 2004), and a key recommendation in the Strategic Review of Health Inequalities in England (Marmot 2010).

Staff awareness

One of our main service objectives is to provide a service that is accessible to and used by vulnerable and deprived children. We made our focus on these children explicit by including it in our planning processes and staff training. As a result of this all our staff, both clinical and administrative, are aware of and sensitive to the difficulties faced by deprived families. Making health services more aware of the problems faced by families living in poverty has been recommended as a key action in tackling health inequalities (Benzeval *et al.* 1995) and our experience is in keeping with this. Feedback from staff briefings indicated that raising awareness of the difficulties faced by deprived families brought home to medical staff the importance of seemingly dry processes such as equity audit, and to admin staff the importance of their efforts to reduce non-attendance at clinic appointments. In addition to training our own staff, we also deliver regular teaching sessions on child health inequalities to general practitioners and medical students, and offer community placements, which include time in non-health services such as Social Care and Education. The formal evaluations for these sessions are good.

Accessibility

In response to widespread concerns about inequalities in access to services the Department of Health commissioned a comprehensive review of the evidence on vulnerable groups' access to healthcare (Dixon-Woods *et al.* 2005). A key message from the study was that access to services is dependent not only on provision of services, but also on how difficult the service is to use. Services that require their clients to do more work to use them tend to disadvantage vulnerable groups. Our service has removed many of the barriers that deprived families often find difficult to navigate: we see children in local community clinics close to home; our referral and booking process is simple and inclusive as we accept referrals from all agencies and prioritize on the basis of need rather than source of referral, we offer families a choice of time and dates for appointments, and provide telephone reminders; for families who are likely to struggle to attend we enlist the help of other agencies to support attendance at appointments; we see children in non-health settings when appropriate, for example in schools, Children's Centres and in our child-friendly suite at the Police Station.

Active management of non-attendance

Current National Health Service (NHS) practice is that patients may be discharged after two consecutive non-attendances. The outcome of this is that many disadvantaged families are lost to follow-up and do not present again until their child's health has deteriorated and caused a crisis or emergency. Our service has a policy of active management for non-attendances. We recognize that this group includes children with very high levels of need, and rather than discharge, we take action to ensure that the child is seen or that appropriate follow-up is provided via our multidisciplinary network. We believe that non-attendances should be viewed as 'children who were not brought' rather than children who 'did not attend' (Munro 2012).

Acceptability

Some services targeted specifically at deprived populations have failed because they are stigmatizing and are perceived as poor services for poor people. Current thinking is that focusing services only on the most disadvantaged will not reduce inequalities sufficiently, and that actions need to be universal but with a scale and intensity proportionate to the level of deprivation (Marmot 2010). Community paediatricians provide care that is available to all and covers a wide range of conditions, so we do not carry the perceived stigma of services aimed specifically at poor children.

Comprehensive service provision

Work from the USA has shown that initiatives that offer comprehensive services that can address many issues at once are more likely to be successful at reducing health inequalities due to poverty (Spencer 2000). This model of care is much easier for families to navigate than one where they have to visit a different professional or specialist for each issue. Community paediatricians have broad-based training and work in multi-agency and multidisciplinary networks. Consequently they are able to manage a wide range of issues across the physical, learning, emotional and psychosocial domains, and provide a comprehensive and co-ordinated service for their patients via local community paediatric clinics. They carry out holistic assessments then draw in the necessary multi-agency and multidisciplinary support commensurate with the level of the child's needs. When there are other professionals already involved, community paediatricians offer joint appointments and co-work wherever possible. This model of working is in keeping with some of the key recommendations in the Department of Health strategy for tackling health inequalities: 'Designing services which can meet the complex needs of groups with particularly poor health outcomes, taking a holistic approach and joining up services at the point of delivery' (Department of Health 2002).

Data

The NHS is required to monitor equity of access to health services in order to reduce inequalities and facilitate service development and commissioning. Hospital-based services and primary care can obtain this information from routinely collected data and postcode links to deprivation indices. Unfortunately until recently there has been no national system for collecting information on community paediatric services, nor any agreed minimum data set for paediatric care delivered outside of hospitals. The development of common information systems across all community paediatric services will allow benchmarking and comparison, which are currently not possible.

In the absence of a national system, the Derby community paediatric data collection system was created *de novo* by the clinicians within the service, led by doctors Fawzia Rahman and Liz Adamson. The system has recently been piloted to test its utility as a national data set for community paediatrics (Rahman *et al.* 2007). The information provided by this system has proved invaluable for service evaluation and development and for monitoring the equity of our service provision. The service activity data analysed in this equity study were collected routinely during financial year 2005/6.

Analysis

We used the English Indices of Multiple Deprivation (IMD; Revised) 2004 in our analyses. This is a measure of multiple deprivation at the small area level, which allows identification of small pockets of deprivation. Each small area contains approximately 1500 people and is assigned a deprivation score, which encompasses income, employment, health deprivation and disability, education, skills and training, barriers to housing and services, crime, and living environment. Each area is ranked according to its deprivation score then divided into quintiles, quintile one being the most deprived and quintile five the least.

Derby City Public Health department provided us with the IMD quintile for each contact, derived from the postcode of residence. We grouped service contacts by quintiles of deprivation and analysed our service data by type of contact: clinic attendances, clinic non-attendances, multidisciplinary meetings, new and follow-up.

In order to demonstrate *differential* access for deprived children we compared our service contact profile with the deprivation profile for the entire child population aged 0–16 years in the area covered by the service. We also calculated new contact rates per 1000 population aged 0–16 years and non-attendance rates broken down by quintile of deprivation.

Statistical analysis was carried out using the Statistical Package for Social Sciences, Version 13, IBM Corporation.

Results

Ascertainment

Deprivation data were available for 92% (5312/5784) of the service contacts during the study period.

Deprivation profile of service users

Seventy per cent of our service contacts were with children in the two most deprived quintiles. Deprived children were more than twice as likely to require multi-agency meetings as part of their medical care [odds ratio (OR) 2.28, 95% confidence interval (CI) 1.94–2.69]. All types of contact showed a steep socioeconomic gradient (Figs 1–3).

Population contact rates

The proportion of deprived children seen by our service is greater than the proportion of deprived children in the area covered by the service: 70% versus 56%, OR 1.78 (95% CI 1.68–1.89). A marked social gradient was apparent in all types of contact (Table 1). The new contact rate for the most deprived

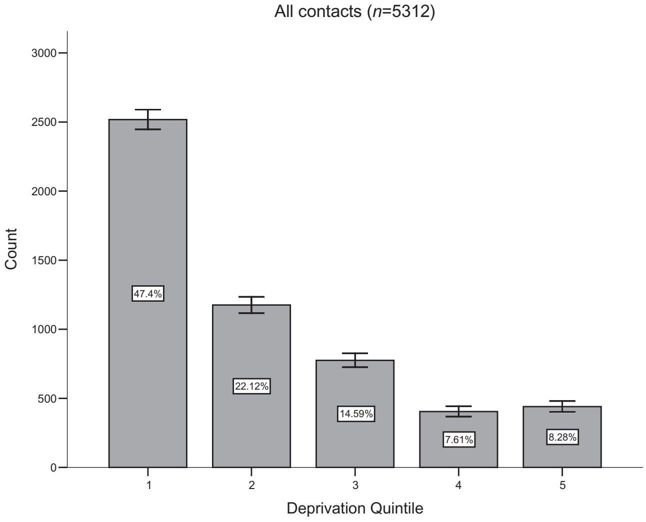

Figure 1. Deprivation profile of all service contacts. Error bars: 95% confidence interval.

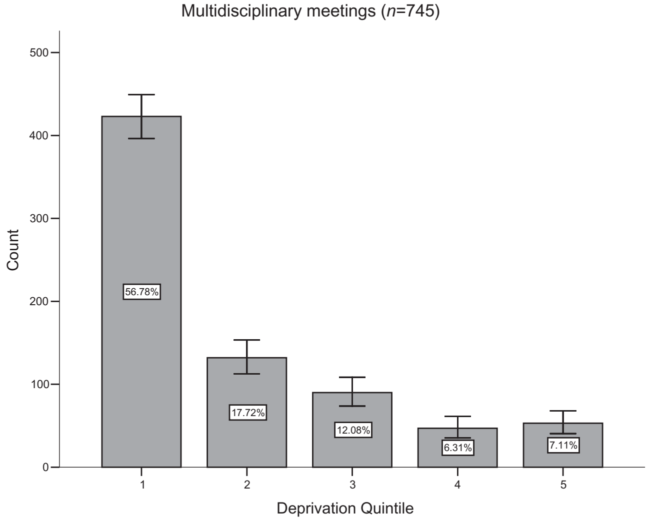

Figure 2. Deprivation profile of children having multidisciplinary meetings. Error bars: 95% confidence interval.

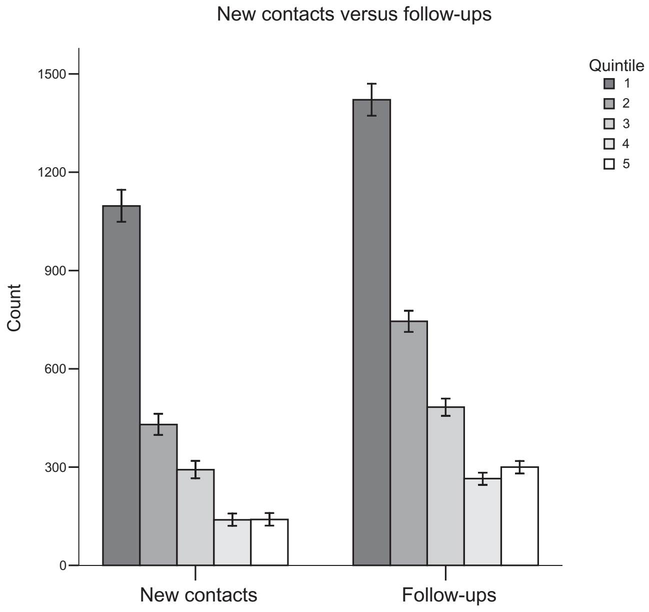

Figure 3. Deprivation profile of new and follow-up contacts. Error bars: 95% confidence interval.

quintile was over three times that in the least deprived quintile, with a marked gradient across the quintiles (Table 2).

Clinic non-attendance rates

The clinic non-attendance rate for deprived families was more than double that of non-deprived families, there was a marked gradient across the quintiles (Table 3), and we felt there was room for improvement across the service in general. This prompted us to carry out a detailed audit into the causes of non-attendance at clinic appointments, followed by introduction of a new process for managing referrals and appointments. Our administrative staff were key to this process. The outcome of this is that the overall non-attendance rate has halved and the gap between the most deprived and least deprived is closing steadily.

Discussion

This study demonstrates that the model of care used by our community paediatric service can successfully engage even the most deprived children and families, thereby reducing health inequalities due to poor access. Key features are multi-agency working, removing barriers to access, raising staff awareness and careful monitoring of equity profiles. These features are generalizable to other services.

Moving beyond measuring inequalities

Measurement of inequalities is important, but needs to be followed by effective action to reduce them. This can be difficult because most of the causes of health inequality lie outside the Health Services, and where there is inequity within the Health Service correction often requires redistribution of resources, a process that can challenge traditional service configurations. However, it is possible to identify local inequities and act effectively to reduce them, as we have done in our work to reduce clinic non-attendance rates.

Using equity audit for quality improvement

The NHS is required to use health equity audit to reduce inequalities and facilitate service development and commissioning (Department of Health UK 2003). Comprehensive guidance has been issued but usage has been low, with fewer than 20% of Primary Care Trusts fully engaging with Health Equity Audit; barriers cited include data collection difficulties, lack of training, lack of direction, lack of support from stakeholders external to the Trust, lack of support from Strategic Health Authorities and in some cases lack of support from the Trusts themselves (Health Development Agency 2007). Our study demonstrates that even small clinical teams such as ours can overcome these barriers by self-directed learning and action, embedding equity audit in our routine service evaluation and planning, collecting the data ourselves where no national system is available, analysing the data ourselves in the absence of dedicated analyst support, and taking whatever

Table 1. Deprivation: comparison of service profile with population profile

	Quintiles 1, 2 (most deprived)	Quintiles 3, 4, 5 (least deprived)	OR (95% CI)
Overall population	56% (67 914/121 028)	44% (53 114/121 028)	Baseline
All contacts	70% (3 693/5 312)	30% (1 619/5 312)	1.78 (1.68–1.89) $P < 0.0001$
Multidisciplinary meetings	74% (555/745)	26% (190/745)	2.28 (1.94–2.69) $P < 0.0001$
Clinic attendances	67% (2 415/3 611)	33% (1 196/3 611)	1.58 (1.47–1.69) $P < 0.0001$

OR, odds ratio; CI, confidence interval.

Table 2. New contact rate per 1000 population aged 0–16 years

Quintile	New contact rate	OR (95% CI)
5 (least deprived)	9.3 (141/15 231)	Baseline
4	9.6 (140/14 562)	1.04 (0.9–1.3)
3	12.5 (292/23 321)	1.36 (1.1–1.7)
2	14.3 (445/31 174)	1.55 (1.3–1.9)
1 (most deprived)	29.8 (1 097/36 740)	3.29 (2.76–3.93)

OR, odds ratio; CI, confidence interval.

Table 3. Non-attendance rates by quintile of deprivation

Quintile	DNA rate	OR (95% CI)
5 (least deprived)	11% (43/377)	Baseline
4	13% (45/336)	
3	14% (96/665)	
2	14% (144/1006)	
1 (most deprived)	25% (517/2070)	2.59 (1.8–3.6)

OR, odds ratio; CI, confidence interval.

action is possible within our own resources and capability to tackle any inequities that are identified. These service developments were driven by strong leadership with a focus on disadvantaged children.

Strengths of this study

We have produced robust information in a high-priority area where the current literature is limited. Tackling health inequalities by monitoring equity of access to services is a high priority in current NHS policy. A substantial and increasing amount of paediatric care is being delivered in the community in support of the white paper 'Our health, our care, our say' but there is no national information system for community paediatric services. We hope that this study may serve as a template for others to monitor and improve equity in their services.

At a time when there is uncertainty about the best way of engaging deprived families we have demonstrated clearly that our model of care is accessible to these families, and have described the key features of this model so that these may be generalized to other services.

Health Equity Audit has been identified as a key tool for tackling health inequalities, but as few as 20% of Primary Care Trusts are using it. We have demonstrated that clinical teams can successfully use Health Equity Audit even in the absence of external support.

Limitations

Our findings relate to access and service provision, and not to outcomes. We are currently expanding our information system to include a set of outcome measures but many of our interventions form part of multi-agency packages of care so it will be difficult to unpick the relative contribution of each service.

It is likely that we have underestimated the number of deprived children seen by our service because we analysed data from our generic community paediatric clinics only, and not from our statutory examinations for Safeguarding (child protection) and Children in Care, who often come from vulnerable and deprived families.

Finally, we would have liked to compare our service with other community paediatric services but this was not possible because the literature in this area is limited and there is no common information system in place for community paediatrics nationally. However, we hope that our paper will encourage other paediatric services to conduct their own equity audits and contribute to the literature in this important area.

Conclusions

This study demonstrates that the model of care used by our community paediatric service can successfully engage the most deprived children and families, thereby reducing health inequalities due to poor access. Key features are multi-agency working, specific focus on removing barriers and making services easy to navigate, raising staff awareness, and careful monitoring of equity profiles. This needs to be underpinned by strong leadership focused on vulnerable children, and a robust data and information system. The key features can be generalized to other services.

Our findings provide support for tackling health inequalities via enhanced generally available health services that are available to all but can respond proportionately to children with greater levels of need, rather than services aimed purely at the most deprived.

We have shown that it is possible for clinical teams to embed and use health equity audit to improve and monitor equity in their service, even in the absence of external support systems. We hope that this study will provide a template for others to monitor and improve equity in their own service.

Key messages

- The model of care used by our community paediatric service can contribute to tackling health inequalities by successfully engaging even the most deprived children and families. Key features are multi-agency working, making services accessible, raising staff awareness and careful monitoring of equity profiles.
- This study provides support for tackling health inequalities via services that are available to all but capable of responding proportionately according to the child's level of need.
- The NHS is required to use health equity audit to facilitate reduction in health inequalities but there has been very poor take-up, and a range of barriers have been cited. We have shown that clinical teams can embed equity audit in their service planning and development and use it to improve the quality of their service, even in the absence of external support systems.

Conflicts of interest

None.

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