**Preventive dental visiting: a critical interpretive synthesis of theory**

**explaining how inequalities arise**

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**Running title: Theory review of inequalities in dental visiting**

**Abstract:**

In many countries those with lower socio-economic status are disproportionately affected by poor oral health. This can be attributed, at least in part, to differences in preventive dental visiting. While several theories have been applied to the area, they generally fail to capture the recursive nature of dental visiting behaviour, and fall short of informing the design of complex interventions to tackle inequalities. ***Objective:*** to undertake a systematic review and synthesis of theory in order to provide an overview of the pathways which bring about socio-economic inequalities in early dental visiting, and identify possible intervention points. ***Methods:*** Electronic searching identified 8,947 titles and abstracts. Paper screening and citation snowballing left 77 included papers. Drawing on the tenets of Critical Interpretive Synthesis, data extraction involved capturing concepts and relationships and translating these sometimes into synthetic constructs. ***Results:*** We theorise that at the individual (micro-level), dental visiting behaviour is influenced by: the ‘*Importance of obtaining care’*, ‘*Emotional response*’ and ‘*Perceived control*’; which feed into a balancing of ‘*Competing Demands*’ against ‘*Internal resources’* (coping, self-identity), although attendance is tempered by the effective ‘*Affordability and Availability of services.’* Positive *Care experiences* are theorised to lower the demands and increase internal resources associated with dental visiting. We also outline meso-level factors (*social norms and sanctions, obligations, expectations and trust, information channels, social structures*) and theorise how these can exert an overwhelming influence in deprived areas. ***Conclusions:*** Socio-economic inequalitiesin early dental visiting emerge from several stages in the care-seeking process. Dental visiting behaviour should be viewed not just as a one-off event, but extending over time and social space. Since there is recursivity in peoples’ most recent dental experience and any future visits we identify that interventions which make care a positive experience for low socio-economic patients may be particularly beneficial in reducing inequalities.

**Abstract:** 299 words

**Introduction:**

The Institute of Medicine defines access to healthcare as ‘the timely use of personal health services to achieve the best possible health outcome’.1 In the context of dentistry, delay in using services has particular consequences: if care is delayed until symptoms occur, this is likely to result in poorer long-term oral health outcomes. Decayed teeth which may have been treated with a filling at an earlier stage, end up having root canal treatment or being extracted. And by intervening early and applying fluoride where there is tooth demineralisation, for example, an early lesion can be re-mineralised, and a filling avoided, with all its inconvenience and long-term maintenance costs.2 Several studies show regular dental attendance is associated with better oral health outcomes, even after adjustment for socio-economic status (SES).3,4,5,6 Thus the positive effects of regular, preventive dental attendance are well established, supported by a number of studies all showing that people who visit the dentist regularly have better oral health and quality of life.6,7,8,9,10 Of particular note, is a longitudinal study which not only shows that after adjusting for SES and oral hygiene, regular dental visitors have better oral health at any given age, but that the association strongest, the longer regular dental visiting is maintained8.

In middle and high-income countries oral health inequalities are a major challenge11. Similar to the pattern seen in other chronic diseases, a consistent socio-economic gradient exists whereby oral health is poorest among those in the lowest social position.10,11,12,13,14 Rates of complete tooth loss, for example, are higher in lower SES groups: people in higher managerial and professional occupational groups in the UK have 10-11% more natural teeth than those who are long-term unemployed.15 And inequality in some parts of the world is increasing – UK analyses show total tooth loss has declined by 80% in the highest social class and by 48% in the lowest social class over the past two decades.15

Parallel to a social gradient in oral health, is a social patterning in dental visiting,16,17,18 with people at the lowest end of the socio-economic spectrum, less likely to visit a dentist for a check-up. And although there is some debate about the degree to which SES differences in preventive dental visiting contribute to observed inequalities in oral health outcomes, it is clear that differentials in this behaviour play at least some part.3,19 In order to design interventions to reduce SES differences in preventive dental visiting, and ultimately inequalities in oral health, we need to understand why such differences occur. This is all the more necessary since evidence shows that some well-meaning innovations to improve access can actually increase social inequalities in service use.20

Theories are a means of simplifying complex realities,21 with the main conceptual model previously applied to explain SES differentials in dental visiting being Andersen’s model.22

This takes a determinants approach (listing explanatory variables in a mainly linear fashion), although the model appears to lack explanatory power, and findings are often contradictory.23,24,25,26 Several authors identify a need for further conceptual development in this area, and a more effective model which better captures the dynamic nature of dental visiting - one which links the individual to their social context and better outlines how material and structural factors interact with social and psychological factors over time to give rise to oral health inequalities.27,28,29,20,31 The aim of this article is to report a systematic review of healthcare seeking concerned with explaining SES differences in preventive dental visiting, based on the review question ‘What mechanisms are theorised to bring about SES inequalities in preventive dental visiting?’

**Methods**

An iterative approach to the review was adopted, drawing on the tenets of Critical Interpretive Synthesis (CIS).32,33 The process started by drawing on broadly relevant ‘seminal’ healthcare seeking literature (33 highly cited papers/book chapters). These were used to develop an initial conceptual framework and electronic search terms which were then applied in a narrower electronic search of the literature restricted to either empirical or theory papers concerned with exploring SES differences in the dental service utilisation behaviour of adults. Searches were limited by date (1970 to present), language (English) and setting (OECD countries). Electronic search of 8 databases identified 8,947 titles and abstracts, which were screened to identify 80 papers. A random sample of 20% (n=1790) were double screened. Paper screening was then undertaken by 2 reviewers and 26 papers excluded. Reference chaining (n=23) broadened the scope of the literature outside the narrow confines of the electronic search and finished when additional articles did not develop the work further; resulting in a total of 77 included papers (Figure 1).

Data was extracted from articles into tables listing any concepts and relationships which were purported to explain a social patterning in preventive dental visiting. This was done using Kerlinger’s definition of a theory which specifies that there are three properties of theory: 1) constructs which are identifiable; 2) relationships among constructs which can be specified and 3) relationships which are falsifiable (testable).34 Constructs and relationships were extracted from both empirical and theoretical papers in the same way32. Since data extracted from empirical papers was for the purpose of developing theory rather than to establish empirical evidence for theoretical inferences, study date, quality and cultural context were not considered.

Initial data extraction tables were then examined to determine presence of dominant groups or clusters of constructs around which the synthesis could be organised, which led to data being re-tabulated according to micro-level (individual, or psychological), meso-level (social processes and community structures) and macro-level (population-wide structures and policies) constructs. A summary of data extracted according to this multi-level analysis is available as an online appendix, along with references of all included articles (Appendix 1). CIS involves thematic analysis, but is not limited to merely summarising concepts and relationships as set out in the original publications. Using narrative synthesis methods, by juxtaposing data extracted from all included studies, and exploring relationships within the whole dataset, we incorporated an element of integration and interpretation into our synthesis35. To facilitate this process, logic models integrating concepts and relationships were drafted and redrafted using a constant comparison method, until a point of theoretical saturation was reached. This means that some of our second order constructs outlined underneath each level are ‘synthetic’ constructs (simultaneously consistent with the original concepts and relationships extracted from papers but extending beyond the insight provided by individual articles)32.

**Results**

An overview of the conceptual framework of main and second-order constructs is given in Table 1. Before outlining various key constructs in turn in each level, and how they fit together, we give an overview of how various micro-level constructs are linked in a recursive manner, explaining how inequalities in dental visiting behaviour tend to become ingrained over time (Figure 2).

*The micro-level*

Following theoretical literature outlining illness behaviour as a process,36 we conceptualised preventive dental visiting as a pathway, with inequalities arising from several factors which generate *motivation* to seek preventive dental care (e.g. perceived seriousness); although further factors such as coping responses, availability of services etc., subsequently determine whether a person actually makes contact with services (Figure 2). In other words, motivation is *necessary*, but may not be *sufficient* to carry people through to obtaining care when faced with other demands. Often conceptualised and labelled as ‘barriers to care’, we theorise that micro-level constructs such as ‘*Affordable and Available services*’ are relative, and determined by the degree to which people can cope with other demands. Our micro-level model, therefore, is a more dynamic model than is conceptualised in lists of barriers/enablers.37 Rather, preventive visiting is envisaged as determined by a ‘levers and filters’ principle – dependent on whether people’s resources (coping, self-esteem etc.), outweigh the various other demands of their life. And this fluctuates as internal resources ebb and flow along with the pressures of living in challenging social circumstances.37

Our model (Figure 2) also incorporates a life course dimension into explaining SES differences in dental visiting behaviour, by including feedback loops linking several of the component constructs. People’s experiences of dental visiting are often connected and reinforced - for example, an unpleasant experience receiving care means that more even internal resources will be required next time. This can tip the trade-off against competing demands in an unfavourable direction with the result that services become essentially ‘unaffordable’. Conversely, a good experience lowers barriers for a return visit.

*Micro-level constructs*

*Importance of obtaining care*

Self-evaluation of oral health

A consistent finding across the included studies was that SES differences in self-evaluation of oral health are an important factor giving rise to care-seeking inequality. Muirhead’s study of the people who are working but poor in Canada24 is typical of many others – people with a perceived need were almost three times *less* likely to have sought dental care in the last year than those with better self-rated oral health. This pattern of care-seeking also influences uptake of dental care for children – parents who are satisfied with their own dental health are more likely to use services for their children.24 Whether self-reported oral health status should be interpreted as a cause or effect of regular dental visiting is debatable – many studies show that people with few or no teeth left visit a dentist less regularly than dentate people.23,25,38 There is some support, however, to interpret self-evaluation of oral health as ‘causal’ at least in part.31 Having a poor view of one’s oral health can reflect not only that in an objective sense, treatment is needed, but also wider feelings of shame attached to having what is perceived to be poor teeth, and a general low regard of self. Although these psychological characteristics are measured and may vary at the individual level, they are also heavily influenced by meso-level factors such as the extent to which people with poor oral health are stigmatised.

Perceived seriousness, susceptibility and care efficacy

Self-evaluation of oral health is closely related to perceived seriousness: in other words, how signs and symptoms of poor oral health are perceived – whether having discoloured teeth, bleeding gums, loose teeth etc. are seen as serious, and something to be avoided/addressed. The converse of this is a belief that having sound and healthy teeth is desirable. The Health Belief model suggests that both perceived severity (subjective assessment of the severity of a health problem and its potential consequences) and perceived susceptibility (subjective assessment of risk of developing a health problem) vary at the individual level and predict engagement with preventive health seeking behaviours such as getting vaccinated or attending health screening appointments, when taken together with the balance of perceived benefits of taking action (care efficacy) weighed against perceived barriers39.

Empirical work in the dental field suggests that while perceived susceptibility may have a predictive value by itself,40 it acts as a necessary but not sufficient factor in explaining differences in preventive visiting. Studies find that interaction effects existbetween perceived susceptibility, seriousness and care efficacy (beliefs about positive outcomes associated with preventive visiting),40, 41 and when measured together produce a more highly predictive model of preventive dental visiting; adding weight to Rosenstock’s original conceptualisation39 – that preventive health care use is the result of a range of interdependent factors. Again, while differences may occur between individuals and be measurable at the level, these beliefs tend to be moulded through social interactions (see meso-level section; *social norms*).

*Perceived control*

‘Perceived behavioural control’ (PBC) is described in the Theory of Planned Behaviour (TPB) as ‘the degree to which an individual believes that the behaviour is under his or her control’.42 A similar idea appears in the Health Belief Model as ‘barriers’39 and in the Triandis model as ‘facilitating conditions.43 In the TPB model, like attitudes and social norms, control beliefs are thought to influence behavioural intention. When applied to preventive dental visiting, there is some empirical support for the TPB, with ‘perceived control’ more powerfully predicting intention to visit a dentist for check-ups, than specific health beliefs related to the behaviour.44

Ajzen clarifies conceptual ambiguities surrounding PBC by drawing a distinction between *self-efficacy* (people’s beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives),45 and *controllability* (the extent to which carrying out the behaviour is up the individual46). These two sub-components of PBC are thought not to simply correspond to internal and external control beliefs – a distinction drawn in Rotter’s concept of perceived locus of control47 (people’s perception of the extent to which events in their lives are caused by their own actions or by factors beyond their control). Unlike PBC, locus of control is not behaviour-specific but a general trait, although the holding internal control beliefs has also been found to be predictive of preventive dental attendance, with internal control beliefs increasing in line with increasing SES.48

A general view that life is un-patterned and unpredictable: a series of events over which the individual has no control is typical of low SES communities.49 Feelings of helplessness in these environments are theorised to breed a general orientation towards the present rather than the future (fatalism), since life tends to be experienced as a series of recurrent depressions and peaks focused on the gratification of basic needs.48 Fatalism is theoretically in opposition to preventive dental visiting which is based on a reference to abstract situations and concerns about the future. Theory indicates although fatalistic beliefs are experienced at the individual level, they are influenced by components of social capital (see the meso-level section; *obligations*); and so people living in disadvantaged communities are thought to be relatively more vulnerable to feelings of fatalism and hopelessness.50

*Competing demands, internal resources, affordable and available services*

Andersen & Newman51 suggest that dental care is viewed by society as less necessary than other medical services and thus the poor, with more limited resources, place a low priority on dental care and use dental services less readily. Limited personal income however, does not fully explain SES differences in dental visiting. McKinlay52 concludes from both US and UK, that ‘economic considerations are not the only or necessarily the most important determinant of utilisation’. While limited income is an obvious pressure experienced by low SES groups, there are other burdens that can be as important as financial factors. There are multiple (not just financial) aspects of poverty - experience of a higher number of negative life events, high levels of stress, less job security and control of work, which place additional demands on people.27 Gibson et al53 characterise regular dental attenders as able to reorder their life, both daily and strategically to accommodate dental attendance. And this, we theorise, becomes more difficult in more pressured, and less structured and predictable, low SES environments.

Antonovsky posits that the more one’s life is characterised by consistency, participation in shaping outcomes and an underload-overload balance of stimuli, the more one is able to see the world as coherent and predictable.54 Sense-of-Coherence (SOC) has been conceptualised as a coping mechanism, developed during childhood, as a tendency to see life as predictable and manageable. People who see the world as coherent tend to have experienced close emotional family ties and life in generally stable communities.55,56, which links this factor to meso-level social structure influences such as segregated, chaotic neighbourhoods, and broken nuclear families, because people are less likely to develop a high SOC in these environments.

SOC, and other measures of coping, are an ‘opposite side to a coin’ to state-anxiety responses to ‘normal’ potentially ego-threatening situations such as visiting the dentist for a check-up. Other personal characteristics measured as features of self-identity (self-esteem, public self-consciousness) also provide resources for coping with stressful demands, and have been associated with a high frequency of dental attendance56. Individuals with a strong sense of ‘self’ have the confidence to believe that they can overcome adverse circumstances and succeed, and this helps form resilience when faced with challenging circumstances. So while dental service availability is often measured in terms of geographic proximity, this may be insufficiently nuanced to capture how low SES groups experience what is ‘available’ to them. ‘Available’ care may be better represented as the type of service which allows accommodation of dental service use within an otherwise pressured existence. Although there is evidence that increasing the proximity of dental services in low SES areas raises utilisation rates,57 there is also evidence, both from the US and Scotland, that certain groups will still underutilise even when a facility is ‘a stone’s throw away’.52

*Care Experience*

Having a ‘regular source of dental care’ has been found to be predictive of preventive dental attendance.58 Although it could be argued that this pattern represents a reverse causation, it is also possible that these findings are indicative of the role played by care reciprocity – a value informed by retribution social norms at the meso-level. Low SES patients are characterised as being less likely to have continuing relationships with dentists, while at the same time having a greater preference for personal relationships when dealing with formal situations - which otherwise are perceived as ‘cold, unfeeling and belittling’.49 Again, these attitudes are often culturally defined (see meso-level; *obligations*). Furthermore, social interactions which take place in dental practices are shaped by dental professional norms too.

*Relationships between micro-level constructs*

The primary ‘filter’ giving rise to the social patterning of dental visiting, is theorised to be a motivational one, influenced by the first main construct of our model (1) attitudes and beliefs about the *Importance of obtaining care;* although we theorise that both 2) *Perceived control* and 3) *Emotional responses*, also influence visiting behaviour, (Figure 2). Low SES individuals are theorised to not only be less likely to have attitudes and beliefs about a high importance of care; but be less likely to perceive that they have the ability to carry out preventive visits. Moreover, since affect has a direct and primary role in motivating behaviour, and is a generally quicker, easier and more efficient way to navigate a complex and uncertain world, *Emotional responses* are also theorised to be an important behavioural influence.59 And we theorise that an interaction exists between the *Importance of obtaining care*, *Perceived control* and *Emotional responses*, since there are generally two paths that people take when faced with perceived threats (e.g. poor oral health): either becoming motivated to control the threat (through dental attendance) or becoming motivated to control their fear about the threat (through thought suppression/ dental visit avoidance). Perceived control is postulated to determine which path a person takes.60

These first three constructs in the model are theorised to feed into a balancing of *Competing demands* (4) against *Internal resources* (5), both of which have the potential to dilute *Intention to seek care* (volition), (Figure 2)*.* We theorise that the poor, who must manage sporadic income, juggle expenses and make difficult trade-offs, and are at the same time are less likely to high levels of internal resources (coping strategies and a sense of self-identity), are more inclined to fall short of the motivation necessary to drive preventive dental visiting. Even if sufficient volition remains, this can be further tempered by 6) how *Affordable and Available the service is;* and 7) the *Care Experience* itself. Again, these factors, are theorised not to represent absolute ‘barriers’ necessarily - services which are costly in terms of time, money and energy (bureaucratic form filling, appointments) are conceptualised as having the potential to place differential burdens on people, depending on their social circumstances. Since poverty-related concerns are shown to consume mental resources (and even reduce cognitive capacity) leaving less for other tasks,61 the demands of navigating bureaucracy concerned with claiming free care can compromise how ‘affordable and available’ the service really is, for those most in need.

The meso-level

There is a growing recognition that meso-level factors can exert an influence on oral health that is greater than the sum of the characteristics of individuals living in a community29. For example, although ‘self-efficacy’ is a recognised, and important influence at the micro-level; ‘perceived collective efficacy’ is an emergent group-level property of a community, and not simply the sum of the efficacy beliefs of its individual members62. In practice, what we observe is that ‘good behaviour spreads *[and]* so does bad’63, within communities.

Social cognitive theory identifies that there is a triadic dynamic between a behaviour, the individual performing it, and the environment in which it is performed62. Bandura explains how, although the ‘self’ (micro-level) is socially constructed, people are not merely conduits for ‘socio-structural influences’- they are also active in shaping the character of the social systems in which they live62. In other words, there is some ‘reciprocal causality’ between micro and meso-level factors. Bandura also stresses that the mutual influence among these ‘causal factors’ can be asymmetrical. He gives an example of being dropped into deep water; where the environment takes a dominant position. Variations of person and behaviour become almost inconsequential - for virtually any person, when dropped into deep water, will respond by trying to swim. Applied to dental visiting, this means that while virtually everyone attends a dentist when in dire circumstances (toothache), visiting preventively is much more discretionary. It also means that when socio-economic circumstances are overwhelmingly conducive to symptomatic dental visiting; meso-level factors are the prime determinants of the behaviour.

The concept of social capital is increasing used to help explain observed differences between individuals, in recognition that individual resources can be combined with other resources in a synergistic way, to produce system-level patterns behaviour among communities.63 The concept of social capital is probably easiest to understand alongside other forms of capital – physical capital (resources such as tools, machines and other equipment which help people to be effective); human capital (skills and knowledge, for example through education, which help people be effective); and social capital (relations between people which help people to be effective). It is necessary to consider both some of the elements of social capital such as *social norms and sanctions*, which are the mechanism by which social capital produces its effects; and also which forms of social structures facilitate these elements of social capital being established (for example, social norms will only become established where social networks are closed to outside influence).

*Social norms and sanctions*

Norms are individuals’ informal understandings of what others do and think they should do. They effectively promote certain behaviour (prescriptive norms) by way of silently understood precepts of normal behaviour, and inhibit others (through sanctioning). Early work by Parsons depicts illness behaviour (need to seek assistance) as determined by notions of deviance (a deviation or departure from normal social functioning).64 What ‘normal’ oral health represents, and what is deemed as reasonable time, effort and money to be spent maintaining it (legitimacy), is thought to be shaped by how ‘principal reference others’ view the matter.

Illness behaviour models suggest, for example, that chronically ill people adjust their activities to take account of permanent health disorders.65 This is illustrated in fieldwork involving working class mothers, who were observed as incorporating illness into their daily lives; being accepting of restricted lifestyles.66 Gibson et al describe the same phenomenon in symptomatic dental attenders who normalised their dental symptoms as a means of reducing their impact on daily life. New, lower levels of normality were reported to develop, and remain stable for considerable periods of time.53 In low SES communities therefore, where poor oral health is prevalent, many may adapt to lower levels of oral health functioning, with oral health impacts defined accordingly (loss of sleep, days off work etc.). It is also worth noting that perceptions are not just related to health utilities, but can be also part of a status signalling process, since utilisation often involves patient co-payment and oral health perceptions have an aesthetic dimension.67

If illness is deviance, it is clear that some illnesses are more deviant than others, and those suffering become stigmatised as somehow different from the norm. Stigma is defined as ‘an attribute that is deeply discrediting’ (such as race, criminality, but may be illness).68 A stigma causes a gap between the social identity that we assume others have, and a persons’ actual social identity. There is a problem in managing the social interaction between the stigmatised and ‘normal’ people since it is potentially disrupted by awkwardness. The stigmatised person feels uncertain about how they will be treated. The range of emotions that some-one with ‘unacceptably’ poor levels of oral health might feel when anticipating dental care (‘disquiet, concern, trepidation’), overlap with what is often labelled as moderate ‘dental anxiety’.69

The fact that responsibility for the condition (poor dental health) can reasonably be imputed to an individual (decay is mainly caused by poor diet, gum disease by inadequate tooth-brushing), means that having poor dental health can be viewed as socially unacceptable, especially from a dental professional perspective. Stigma is conceptualised as a convergence of three interrelated components: firstly, people distinguish and label human differences; secondly dominant cultural beliefs link labelled persons to undesirable characteristics - to negative stereotypes; and thirdly labelled persons are placed in distinct categories so as to accomplish some degree of separation between "us" from "them”.68 Professional norms are part of defining the gap between ‘us’ and ‘them’, although literature is generally agreed that when health professionals define patients as ‘bad’, then this is a problem.70

Attributions are inferences that people make about the causes of events and behaviour. With a growing emphasis on personal responsibility for self-care a consequence of a rise in neo-liberal government philosophy (see macro-level section), the gap between lay and professional attributions regarding poor oral health can be considerable71  Social attribution of poor oral health is moulded through cultural and social interaction – and is theorised to be influenced, for example, by how frequently the condition occurs in the population and familiarity with symptoms.72 Thus key factors, often measured at the level of individuals such as ‘perceived suceptibility’41 can be heavily influenced just by virtue of living in a low SES community where the prevalence of disease is high. Where lay and professional attributions differ markedly, there is potential for conflict, with social norms determining how this is handled given certain situations.71 Dental avoidance is one solution, since norms of deference to those perceived to be in authority, means that patients may be reticent to express their view. It is notable that ‘non-compliance’ behaviour is more prevalent when there is less reciprocal interaction with patients.41

*Obligations, expectations and trust*

An expectation that where one person acts in the interests of another, this will be reciprocated at some time in the future, provides a valuable source of social capital.63 People with a high density of outstanding obligations from others, have expanded social capital, whereas those in low SES circumstances who are indebted to others in a range of ways (to government welfare services for example), are in a weaker position. To create this aspect of social capital, people must spend time and energy being involved together in a co-dependent way;63 which is one of the reasons that social engagement (participating in social roles, attending social functions, getting together with friends) has such beneficial effects.29,73 Conversely, people living in socially excluded communities are theorised to have a general political cynicism and suspicion of figures of authority, combined with fatalistic attitudes relating not only to one’s own life and health, but the way society works in general.50

It is not the case that all deprived areas necessarily suffer a lack of social cohesion in the same way, which makes relational capital where people are pre-disposed to act co-operatively with others an important community-level asset. This can give rise to important differences in behaviour between areas. For example, ‘thick trust’, in insular low SES communities may create expectations that ‘*you look after your own*’. This can hinder trust in healthcare providers in a way that is socially patterned.50 ,74 Other low SES communities on the other hand, may be constituted of populations with a generally weaker attachment to place and to each other, with social ties between people closer to socially excluded or loose network models. 50

Reduced social trust is a particular problem in low income communities where the relative position between the rich and poor is the greatest. Data indicates that not only are the poorest less likely to have less trust of those in authority (with associated health consequences), but those in the higher position (e.g. dentists) are more likely to trust their comparatively lower income neighbours.75

*Information channels*

Acquiring information about how to obtain and use services can be costly in terms of time. It can also require levels of literacy which may not available to low SES groups. Health literacy (defined as the interaction of the skills of individuals and the demands of the health care system), which embraces processes of ‘acquiring and trusting information, skill development, grasping concepts and technique-intensive protocols, and applying them appropriately’, is considered by some as something which might be improved in low SES groups, in order to help address health inequalities.76 Others however have criticised the approach for its tendency to focus on the educational deficits of individuals, rather than the burdensome demands of messages, directions, and information which are not easily understood or accessible.77,78

Rozier also argues that health literacy is not just an individual risk factor, but a community asset that the public has at its disposal,77 since a key way in which information is dispersed is through social relations. For example; spatially localised interactions can explain why conformity to fads either spreads relentlessly according to a contagion model or remains geographically contained in neighbourhoods.63 How social networks are constituted are a powerful influence in this. While some deprived neighbourhoods correspond to socially excluded network typology (small numbers of people in networks of social ties, a mobile population, relatively high numbers of newcomers and isolated elderly people etc.); others may be traditional working class (with tight and homogeneous social ties made up of family, workmates, old school friends - all having lived in the area for some time, and relatively impervious to outsiders or new information).50 Still others may be more of a heterogeneous network type: where there is a mixture of people with very different views and experiences, all of whom have a range of social contacts in quite different areas.50 These multiplex relationships can give rise to valuable information, with positive benefits, even if the area is poor. In empirical work, having access to multiple sources and types of information is found to be a significant predictor of dental services utilisation; 51 which may be realised through formal (television, radio, newsletters etc) or informal (word of mouth, voluntary groups) means.

*Social structures*

Social structures are networks, rules, roles, procedures and precedents that facilitate mutually beneficial action. Norms, for example, only emerge in communities where there is network closure which resists dilution with external (new) beliefs and values.63 Closure also facilitates proliferation of obligations and expectations ‘*we look after our own*’, which can be helpful (giving instrumental support such as lending money for dental charges, transport, childcare), or unhelpful (appraisal support such as help in deciding which action to take) in promoting preventive dental visiting. The family is an important social structure in this regard. Empirically we find where people are lacking family support (single, widowed, migrants) rates of preventive dental visiting are lower.51, 58

Bridging social capital, or co-operative connections with people from different walks of life is thought to be more valuable than ‘bonding social capital’ (links with people of the same mindset). Unfortunately, social structures in low SES areas often mean reduced opportunities for networking and developing mutual trust between people and a range of professionals. And this makes developing personal ties which foster reciprocity between patients and dentists, less likely.79

Roles are created by expectations, and at the same time they create expectations. Likewise, the shape of organisations and their patterns of working are shaped by the mutual understanding of all the parties involved. Hence, the way dental practices operate, and the way dentists interact with patients, is partly informed by the expectations patients’ have.80 Thus, as theorised by Davis71, a ‘utilitarian-compliant’ model of dental practice care tends to proliferate in low SES areas, to accommodate a ‘working class culture’ which is relatively hostile to professional norms, particularly in relation to the preservation of the natural dentition;81 and this perpetuates inequalities in patterns of dental service use.82

Neighbourhood fabric

While social ties are hard to see, what is more evident, when you walk around some deprived areas, is that the local environment is not supportive of healthy social interactions and personal well-being which are, in turn, conducive to preventive dental visiting, as outlined above (Table 1). Some arrangements, such as co-location of dental and medical services may contribute to strengthening information channels; but where the area is structured so that people have few transport links, meeting places, employment opportunities etc., acquiring bridging social capital will be a struggle.

Macro-level

Relatively few studies incorporate macro-level factors into their analysis.83 General philosophical approaches which underpin government policy-making sit at the top of this hierarchy of macro-level factors, and can shape not just health policy (e.g. dental remuneration arrangements), but welfare, immigration, housing, employment, crime, transport policies too, as well as the level and type of social capital available to communities (Table 1, Figure 3). For example, adoption of neoliberalism ideology sits behind an increased commercialisation of health care, which becomes the context which shapes how dental practitioners interact with patients on a daily basis84. It also shapes policies such as the extent of public/private mix in dental services, and consequent to this, the density of providers in an area etc.85 In a marketplace where purchasers of care look for low bidders, the level and quality of care a society receives is usually commensurate with the level of resources that it is willing to spend – and this influences how practitioners respond to remuneration rules84. Decisions on who is eligible for free or publicly financed dental care (and to what extent), also take place at the macro-level (Table 1).

**Discussion**

While several theoretical frameworks are relevant to explaining how inequalities in dental visiting arise, most tend not to provide an integrated overview enabling intervention design21. Since what to *do* about health inequalities remains one of the most pressing public health challenge of modern times, this is frustrating. Our review suggests that while interventions may be designed to address various psychological factors (such as perceived seriousness, care efficacy, coping etc), and certainly are proximal to the behaviours concerned; many of these factors are linked to meso-level and macro-level factors. Thus in the same way as health status itself, dental care-seeking behaviour is defined by an interplay of social and individual influences, with individuals shaped by their intertwined histories – as members of a particular society as well as ‘biological creatures who grow, develop, interact and age’.86

While Andersen’s work22 recognises that utilisation is determined by both individual and contextual factors, and that interactions exist between these two levels, his model underplays the dynamic aspect of care-seeking and the multi-level linkages which exist. Figure 3 indicates how the various components of our micro-level model are influenced by wider meso-level and macro-level factors, although it must be acknowledged this is only indicative of the many multi-level linkages which exist, and how these shape individuals’ behaviour. In fact the multi-level linkages are so many and various, that if exhaustively mapped out, the pattern of causation would be described as a ‘spider-less web’ of multiple intersections,86 all the while nested in a recursive model of individual behaviour which has a life course dimension.

So what should our approach to intervention planning be? Kreiger suggests that the focus should be on ‘cutting strands’, and that priority should be given to factors most amenable to ‘practical’ intervention’, and the nearest (in terms of the web’s configuration’) to the specified outcome.86 She later warns however, that talk of proximal and distal factors is dangerous, in that it confines multi-level thinking to notions of time and space (proximal being near-to in temporal terms, as well as in distance – ‘close’ to the outcome).87 Krieger argues that this terminology and that of upstream versus downstream approaches, suggests a dichotomy and a more linear set of causal processes than exists in reality, i.e. that distal causes have an impact *through* proximal factors. She puts forward a more ecological model of causation, whereby events at a higher level can impact instantly non-adjacent levels, without intermediaries. In this portrayal, there is no proximal/distal cleavage but more of an intermingling of the two, akin to an eco-system which is constantly evolving. She illustrates with an analogy of a muscle, where biological action (muscle contraction) has an explanation which exists across a number of levels (ranging from the evolution of the species, organism, cell and molecule), and where in the instant of muscle contraction, both proximal (physiological) and distal (evolutionary) causes are at play.87 In Figure 3 we see what this might look like in a dental visiting context. While a range of micro level (psychological) factors, shaped by meso-level (social) factors are outlined as driving intention to seek care, changes in economic policy (macro-level) dictating service financing and pricing, can change the balance of drivers and demands at a stroke, and make the uptake of care unaffordable.

Thus integrated, multi-faceted, multi-level interventions are indicated.87 As well as macro-level initiatives, there is also a need for community-wide interventions aimed at increasing social participation, social support and widening the diversity of information sources to permeate information networks with multiple exposure to uniform messages.87 In considering where interventions should be positioned, our theory synthesis indicates that because a recursivity exists between peoples’ recent dental visit experience and their future help-seeking behaviour, interventions which focus on making care a positive experience for low SES patients are likely to be particularly beneficial. This moreover fits with Kreiger’s advice to position interventions near to outcomes (i.e. preventive visiting) in terms of the pathways involved.

**Conclusion**

This paper identifies points in the care-seeking process where micro, meso and macro-level factors influence individuals’ behaviour. This duly opens intervention-planning up to multi-level approaches and new lines of research which examine the interaction between multi-level interventions. Our review also helps identify where interventions may be most effectively positioned, and informs both the design of interventions and the identification of intermediate outcome measures to evaluate their success.

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**List of Tables and Figures: Captions**

Table 1: Conceptual framework outlining main constructs and second order constructs at the micro, meso and macro level which contribute to inequalities in preventive dental visiting

Figure 1: PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram

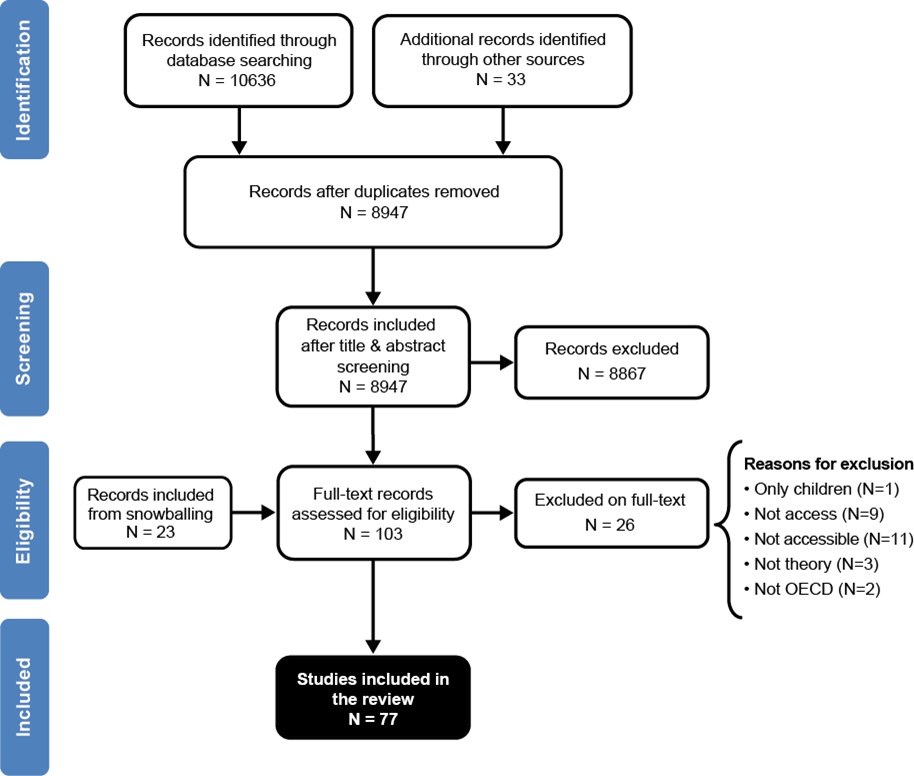
Figure 2: Concepts and relationships explaining socio-economic differences in preventive dental visiting at the micro-level

Figure 3: Outline of linkages from macro to micro-level explaining socio-economic differences in preventive dental visiting

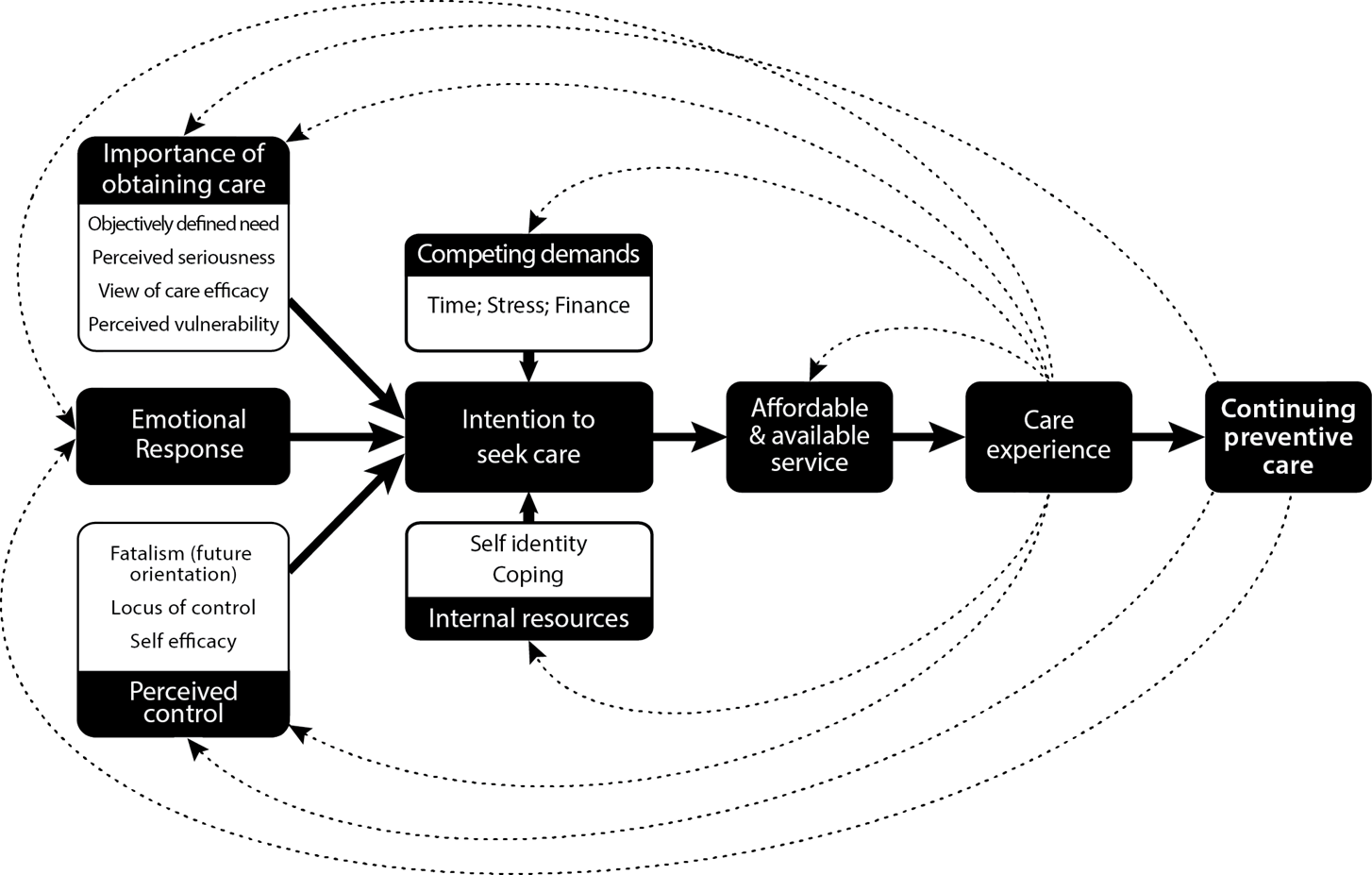
**Table 1: Conceptual framework outlining main constructs and second order constructs at the micro, meso and macro level which contribute to inequalities in preventive dental visiting**

|  |  |  |
| --- | --- | --- |
| **Micro-level**  (individual/ psychological) | **Meso-level**  (social processes and community structures) | **Macro-level**  (population-wide structures and policies) |
| **Importance of obtaining care:** person’s assessment of the importance and likely benefit of receiving care.   * **Self-evaluation of oral health need** * **Perceived seriousness** * **Perceived vulnerability** * **Perceived care efficacy** | **Social norms and sanctions:** behavioural strategies and values subscribed to by the group.   * **Normalising poor oral health** * **Stigma of poor oral health** * **Social attribution** * **Gender roles** * **Deference to authority, and dealing with conflict** * **Professional reputational norms** | **Policies**   * **Neoliberal ideology** (commercialisation of dental services; public/private mix) * **Pricing policies for health care** (extent of public finance coverage, eligibility for subsidised or free care) * **Professional regulation** (use of skill mix, location contracts, dental remuneration and governance arrangements) * **Income disparities** (acceptability of economic inequality) * **Employment policies** (training and support for the unemployed, use of zero hours contracts - predictabilityof income, income protection for dentists in a market-based system) * **Welfare policies** (eligibility for benefits, predictability of consistent sources of income and support, immigration policy) * **Housing and transport policies** (opportunities for meeting places, less segregated neighbourhoods) |
| **Perceived Control:** extent people feel they can control whether they receive preventive dental care   * **Self-efficacy** * **Locus of control** * **Future orientation (fatalism)** | **Obligations, expectations and trust:** expectation that where one person acts in the interests of another, this will be reciprocated at some time in the future   * **Retribution norms** * **Density of outstanding obligations** * **Social engagement** * **Distrust of authority** * **Professional collegiality and obligations** |
| **Emotional Response:** affective response to the prospect of seeking care   * **Dental anxiety** | **Information channels:** information acquired by formal or informal means   * **Education** * **Volume and format of information on services** * **Health literacy** * **Multiplex relationships** **(diffusion of influence and information)** |  |
| **Competing Demands:** factors which take up internal/external resources on a daily basis   * **Time** * **Stress** * **Finance** * **Co-morbidities** | **Social structures:** networks, rules, roles, procedures and precedents that facilitate mutually beneficial action.   * **Family structure** * **Strength and openness of social networks** * **Institutional rules of dental visit interactions e.g. appointment systems, handling defaulters** |
| **Internal Resources:** capacity of cope with mental demands placed on the individual   * **Coping response** * **Self-identity** | **Neighbourhood fabric:** local environmental factors which are conducive or not to social inclusion   * **Density of providers** * **Cost and availability of local transport networks** * **Co-location dental and other services** * **Employment opportunities** * **Housing segregation** * **Crime rates** |
| **Availability of Affordable Care**   * **Information burden** * **Relative availability of regular and emergency care** * **Service location and coverage** |
| **Care Experience:** extent to which dental visits are a comfortable and satisfying experience   * **Social competence (ease in formal situations** * **Negative staff attitudes and poor communication** * **Reciprocity and trust** |

**Figure 1: PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram**



**Figure 2: Concepts and relationships explaining socio-economic differences in preventive dental visiting at the micro-level**

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**Appendix 1: Publications included in the literature review with lower level concepts mapped by micro, meso and macro-level**

|  |  |  |  |
| --- | --- | --- | --- |
| **Citation with publication details** | **Micro-level** | **Meso-level** | **Macro-level** |
| Rozier RG. Commentary on "Oral health literacy: a pathway to reducing oral health disparities in Maryland". Journal of Public Health Dentistry. 2012;72:32-3. USA. | Health literacy | Health literacy is not just an individual risk factor, but an asset such as social capital, that the public has as its disposal. Interventions should include public education for populations and target the public’s ability to better manage their own health; and aim to integrate oral health information into all aspects of families informal and formal social networks using multiple strategies. |  |
| Van den Branden S, Van den Broucke S, Leroy R, Declerck D, Hoppenbrouwers K. Effects of time and socio-economic status on determinants of oral-health-related behaviours of parents of preschool children Eur J Oral Sci 2012; 120:153-160. | Perceived behavioural control  Education influences behavioural control which influences intention | More highly educated mothers less influenced by social norms whereas low educated mothers are more subject to social pressures |  |
| Albino JE, Inglehart MR, Tedesco LA. Dental education and changing oral health care needs: disparities and demands. Journal of Dental Education. 2012;76:75-88. USA. |  | Education is related to health literacy which is related to the ability to use information and knowledge of the health care system and related to missed or failed appointments.  Lack of knowledge and distrust about dealing with bureaucracy e.g. worry about consequences of need to give certification on other benefits |  |
| Peker K, Bermek G. Oral health: locus of control, health behavior, self-rated oral health and socio-demographic factors in Istanbul adults. Acta Odontologica Scandinavica, 2011;69:54-64. Turkey. | Control belief mediate relationships between SES and education – External Locus of Control (controlled by chance) and Internal Locus of control decreases with higher SES and education. Processes of social influences do not act via influencing Locus of Control |  |  |
| Lewis C W, Linsenmayer K A, and Williams A. Wanting better: a qualitative study of low-income parents about their children's oral health. Paediatric Dentistry. 2010;32:518-24. USA. | Poor self-esteem – how you feel about yourself | Reduced choice of appropriate care (only dental emergency services available).  Once a dental appointment defaulter, not allowed back in.  Enablers:  Co-location medical/dental services  Use increased via frequent, trusted contacts. | Eligibility of population for free care |
| Baker SR. Applying Andersen's behavioural model to oral health: what are the contextual factors shaping perceived oral health outcomes?. Community Dentistry & Oral Epidemiology. 2009;37:485-94. United Kingdom. | Effect of predisposing factors is mediated by enabling resources e.g. dental anxiety, finding NHS treatment expensive, then linked to Perceived need |  |  |
| Bernabe E, Kivimaki M, Tsakos G, Suominen-Taipale A L, Nordblad A, Et Al. The relationship among sense of coherence, socio-economic status, and oral health-related behaviours among Finnish dentate adults. European Journal of Oral Sciences. 2009;117:413-8. Finland. | Sense of Coherence hypothesised to make people more resilience to impact of stress in a low SES environment | Culture, traditions and social support have greater impact on developing adults’ Sense of Coherence than childhood Sense of Coherence |  |
| Bernabe E, Watt R G, Sheiham A, Suominen-Taipale A L, Nordblad A, et al. The influence of sense of coherence on the relationship between childhood socioeconomic status and adult oral health-related behaviours. Community Dentistry & Oral Epidemiology. 2009;37:357-65. Finland | Adult socio-economic status influences adults’ sense of coherence, which influences adults visiting behaviour | Cultural values and traditions at community level as well as  social support and participation in cultural activities; all increase adults’ sense of coherence |  |
| Mejia GC, Kaufman J S, Corbie-Smith G, Rozier R G, Caplan DJ, Suchindran CM. A conceptual framework for Hispanic oral health care. Journal of Public Health Dentistry. 2008;68:1-6. USA. |  | Reciprocal determinism  Stigma  Sense of vulnerability and discrimination  Health care resource knowledge  Acculturation  Trust in providers  Modes of transport, distance from health care, neighbourhood make-up, urban/rural living  Familialism (identification and attachment of nuclear/extended families) provides material and emotional support  Allocentrism (collectivism) value inter-dependence and more readily internalise group norms so social behaviours resemble group needs, objectives and points of view  Simpatia – behaviours that promote empathy, respect and avoidance of conflict e.g. reporting problems to avoid inconveniencing others  Enabling social structures  1. Emotional support (love and caring)  2.Instrumental support (assisting with tangible needs)  3. Appraisal (feedback and aid with decision making)  4.Informational support (eg guidance)  Social engagement participation in community activities which define and reinforce social roles and provide individuals with a sense of meaning and attachment to community | Income  Insurance |
| Dharamsi S, Pratt DD, MacEntee MI. How dentists account for social responsibility: economic imperatives and professional obligations. Journal of Dental Education. 2007; 71:1583-92. |  | Dentistry as an elitist profession  Profession geared to consumer demand and less concerned about altruism  Social responsibility to deliver services to people in pain – whatever the circumstances and without exception | Dentistry in a market-based system  Profession lack of altruism fed by government lack of altruism |
| Sisson KL. Theoretical explanations for social inequalities in oral health. Community Dentistry & Oral Epidemiology. 2007;35:81-8. United Kingdom. | Stress and coping | Living in communities with higher levels of crime and anti-social behaviour influences resilience  Job insecurity, control at work  Social support |  |
| Newton JT, Bower EJ. The social determinants of oral health: new approaches to conceptualizing and researching complex causal networks. Community Dentistry & Oral Epidemiology. 2005;33:25-34. United Kingdom. |  | Individual behaviour is not fully explained by collectives of individuals, but higher level community/social factors themselves. Pro-social behaviour measures such as voter turnout, mistrust, attitudes to helpfulness and fairness, frequency and interaction with voluntary organisations. |  |
| Scheutz F, Heidmann J. Determinants of utilization of dental services among 20- to 34-year-old Danes. Acta Odontologica Scandinavica, 2001;59:201-11. Denmark. | Anxiety  Perceived condition of teeth  View of cost of dental care  Exercise habits – taken to indicate general outlook on preventive care |  |  |
| Freeman R. Barriers to accessing and accepting dental care. British Dental Journal. 1999;187:81-4.  United Kingdom. | Lack of perceived need  Anxiety | Uneven geographic distribution of dentists  Lack of training of dental staff insensitive to patients needs  Appointment systems | Cost |
| Milgrom P, Mancl L, King B, Weinstein P. Origins of childhood dental fear. Behaviour Research & Therapy. 1995;33:313-9. Washington, USA. | Mother’s dental fear  Actual and perceived oral status of the mother | Children with mothers who have low education, dissatisfied with availability of dental care are more likely to be afraid.  There is a direct conditioning as well as a modelling effect in the origins of child dental fear |  |
| Petersen PE. Social inequalities in dental health. Towards a theoretical explanation. Community Dentistry & Oral Epidemiology. 1990; 18:153-8. Denmark. |  | Shift work  Weak social network ties  Less active lifestyle (infrequent participation in social and cultural activities)  Process, availability and accessibility of dental services along with the behaviour of the dentist.  Both influence dental norms and culture |  |
| Kiyak HA. An explanatory model of older persons' use of dental services: Implications for health policy. Medical Care. 1987;25:936-52. Seattle, USA | Objective need  Perceived seriousness | Education | Income level for elderly  Availability of insurance |
| Swank ME, Vernon S W, and Lairson D R. Patterns of preventive dental behavior. Public Health Reports. 1986;101:175-84. USA. |  | Family size increases, utilisation decreases  Marital status  Race  Gender  Education |  |
| Petersen PE. Dental visits and self-assessment of dental health status in the adult Danish population. Community Dentistry & Oral Epidemiology. 1983;11:162-8. Denmark. |  | Age  Gender  Education  Type of work – shifts, work in physically exhausting jobs  Father’s occupation (unskilled only)  Urban/rural | Exemption from charges  Income level |
| Blalkie DC. Cultural barriers to preventive dentistry. Australian Dental Journal. 1979;24:398-401. Australia. |  |  |  |
| Muirhead VE, Quinonez C, Figueiredo R, and Locker D. Predictors of dental care utilization among working poor Canadians. Community Dentistry and Oral Epidemiology. 2009; 37:199-208. Canada. | Perception of need for treatment  Non-functional dentition | Gender  Lone parenting (competing demands, neglect own dentition)  Immigration status | Disposable income  Insurance |
| Gibson BJ, Drennan J, Hanna S, and Freeman R. An exploratory qualitative study examining the social and psychological processes involved in regular dental attendance. Journal of Public Health Dentistry. 2000;60:5-11. United Kingdom. |  | Priorities expand (reorder) or contract (normalise) during the patients’ life.  Low SES and problem attenders are less likely to normalise regular attendance behaviour |  |
| Patrick DL, Lee RSY, Nucci M, Grembowski D, Jolles CZ, Milgrom P. Reducing Oral Health Disparities: A Focus on Social and Cultural Determinants. BMC Oral Health. 2006;6:6-17.  USA. |  | Education  Geographic isolation  Low SES groups may find the authority of dental gatekeepers and providers difficult to handle | Cost of dental insurance is insufficient to explain low SES lack of utilisation  Intimidating immigration services creating anxiety about bureaucracy |
| Sanders AE, Spencer AJ, Slade GD. Evaluating the role of dental behaviour in oral health inequalities. Community Dentistry and Oral Epidemiology 2006;34:71-79. | Poorer adults were equally  inclined to practice recommended preventive  behaviours as more affluent adults. This seemingly  contradictory finding serves to emphasize that the  ‘failure’ of poorer adults to seek dental care is  probably more a reflection of the organization and  subsidy of dental care services than an expression  of individual need or values. |  | Eligibility for free public care  Cost barriers suppress visiting behaviour |
| Defranc A, Van den Broucke , S , Leroy R, Hoppenbrouwers K, Lesaffre E, Martens L, et al. Measuring oral health behaviour in Flemish health care workers: an application of the Theory of Planned Behaviour. Community Dental Health. 2008;25:107-114. Belgium. | Perceived behavioural control was a significant predictor of intention but attitudes and subjective norms were not |  |  |
| Clarke SJ. The impact of a community health advisor-based intervention on self-reported frequency of dental visits in a rural, low-income African American Alabama community. The University of Alabama at Birmingham. 2007. USA. | Attitudes that ‘going to the dentists costs too much’ | Gender  Age  Race | Income |
| Kaylor Mary Beth. Access to dental care for women of childbearing age. The Ohio State University. 2007. USA. | Having a dental need  General health status | Education  Geographic availability of dentists | Insurance coverage |
| Horst G ter, Hoostraten J, Haan Wde. Stimulation dental attendance in the Netherlands: Comparison of three conceptual frameworks. Community Dent Oral Epidemiol. 1985;13:136-9.  Netherlands. | Found that the intervention arm without any message was actually more effective than those modelled on TRA or HBM or Knowledge of rights and obligations  Suggest that those who did respond – the reminder ‘triggered a dozing willingness to act’ and therefore the group who did respond were not ‘hard core’ non-attenders. These may have still not attended because of fear, no time, no money |  |  |
| Evashwick C, Conrad D, and Lee F. Factors related to utilization of dental services by the elderly. American Journal of Public Health. 1982;72:1129-35. USA | Perception of need | Education | Low income only has in direct effect through increasing prevalence of poor oral health and likelihood of having dentures. |
| Rudd R.E. Oral Health literacy: correcting the mismatch. J Public Health Dent 2012;72: S31. USA |  | Accessibility of dental information available  Communication skills of dental team  Focusing purely on the deficit of patients is myopic |  |
| Ajzen A. Perceived behavioural control, self-efficacy, locus of control and the Theory of Planned Behaviour. Journal of Applied Social Psychology. 2002;32:665-683.  USA. | Intention leads to behaviour and is a function of three cognitive variables:  1. attitudes towards the behaviour,  2. subjective norms  3. perceived behavioural control.  Attitudes, norms and PBC influence intentions which influence behaviour.  Perceived behavioural control can also influence behaviour directly |  |  |
| Andersen R, Newman JF. Societal and individual determinants of medical care utilisation in the United States. Millbank Mem Fund 1973;51:95-125. | Objective oral health : number of teeth/dentures  Perceived oral problems  Relative value placed on oral health | Gender  Married/widowed  Number and type information sources (newspapers read, where information is accessed, | Education  Income  Dental Insurance |
| Bandura A. Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice Hall, 1986 |  | Reciprocal determination – when the environment is overwhelming, individual differences matter less |  |
| Berkman LF, Glass T, Brissette I, Seeman TE. From social integration to health: Durkheim in the new millennium. Soc Sci Med. 2000; 51: 843-857. | Self-esteem  Depression  Positive affect  Self-efficacy  Coping style e.g. tendency to ask for support and make use of support  Social competence  Meaning/purpose in life – the extent to which individuals identify their roles | Chaotic childhood and insecure family life can lead to difficulty in forming appropriate adult social relations.  Lack of primary attachment can make adults less secure and have lower self-esteem.  Social networks can influence physical and mental health status through providing social support but this is not the only critical pathway and sometimes high levels of support are associated with poorer outcomes. There are strong and weak social network ties and these have different roles. Weak ties (extended non-intimate ties) are essential to occupational mobility  There are 4 primary pathways  1. Social support  a) instrumental/financial: help, aid, assistance with tangible needs e.g. groceries, phoning, cooking etc – aid in kind, money or labour  b) informational: provision of advice or information about particular needs,  c) appraisal: help in decision making, feedback, help deciding which course of action to take,  d) emotional: mostly but not exclusively by strong ties – love, and caring, sympathy and understanding and/or esteem or value from others.  2. Social influence – peer pressure, social comparison, constraining/ enabling behaviour. People obtain normative guidance by comparing their attitudes with those of a reference group or normative others.  3.Social engagement and attachment – reinforce meaningful social roles, - i.e. provide meaning to an individual’s life – results from enacting of potential ties with real life activity – actually attending church, getting together with friends. Network participation provides meaning to an individual’s life by enabling them to participate fully, to be obligated (and to provide support).  4. Access to resources and material goods – jobs, access to healthcare, human capital, housing, referrals - social networks operate by regulating an individual’s access to life opportunities by virtue of the extent to which their networks overlap with other networks – weak ties facilitate the diffusion of influence and information  Social isolation is stressful and leads to more rapid ageing with associated morbidity e.g. periodontal disease. Social ties also influence immune function – people who are more lonely have a weaker immune response to latent infections and this would increase the co-morbidities demands  Ongoing social network participation is necessary for maintenance of self efficacy later in life, and may be reciprocal i.e. increasing self efficacy increases social support.  Social support enhances functional and adaptive coping styles. Multiple social roles promote self esteem, reduce depression, promote positive affect, enhance adaption to life’s stressful events. |  |
| Blaxter M and Paterson L. Mothers and Daughters: a three generation study of health attitudes and behaviour. London: Heinemann Educational Books. 1982 | Illness is a normal part of daily life for working class mothers (seriousness) | A ‘culture of poverty’ is characterised by marginality, low level of social organisation, helplessness, dependence, a feeling of inferiority. |  |
| Davis P. Compliance structures and the delivery of healthcare: the case of dentistry. Soc Sci Med. 1976;10:329-337. New Zealand |  | Bad breath and discoloured teeth may be less stigmatised by low SES groups.  The closer knit the social network, the more likely the individual is to adhere to lay advice.  In higher SES delay in visiting would be more closely associated with individual health status whereas in low SES groups the impact of this is less, and the role of lay referral is stronger.  In communities with close lay referral network ties, these provide a stronger impetus to patients’ views which are incongruent with dentists’ views because these lay views are sustained by the lay network, and this leads to the patient being active, but considerable tension with the provider. Where there is a more loosely knit or truncated lay referral network, the patient from a low SES will be more passive, alienative, and the practitioner dominant (pg 332).  Patients more thoroughly steeped in negative prejudices of lay referral network would be more confident in pressing their case and this results in a more negative attitude to practitioner authority/power i.e. alienative rather than calculative patient orientation. Leading to avoidant patients |  |
| Freidson E. Client control and medical practice. American Journal of Sociology. 1690;65:374-382.  USA. |  | Social acceptance/ legitimacy are shaped by the extent to which the condition offers no prospect of recovery. He says that Parsons overstates the consensus between the patient and caregiver and that there are often times when the patient disagrees with the physician, conflict ensues, and the patient seeks care elsewhere or does not comply with recommended therapy. There is a ‘lay referral system’ within the social network of the patient that prefers one caregiver to others for specific and cultural situations’ |  |
| Han YJ, Nunes JC, Drèze X. Signalling status with luxury goods: the role of brand prominence. Journal of Marketing. 2010;74:15-30. USA. | Status signalling operates at the individual and the family level. | Consumers can be divided into 4 groups based on their ability to pay and their need to signal their social status.  1. Patricians are the Haves – string wealth and social and cultural capital, and have a low need to signal their status – they are concerned with signally horizontally across the social strata – they use subtle signals and inconspicuous consumption.  2. The Parvenus (Latin for arrive or reach) also possess resources but have a high need to demonstrate their status.  3. The Proletarian – commonly used term for lower social class are not motivated to consume and have no desire to consume for the sake of status, or simply cannot afford to consume.They are ‘have nots’ with low status signalling)  4. The Poseur – from the French word meaning ‘a person who pretends to be what he is not’ is highly motivated to come even if he can’t afford it. Also are ‘Have nots but have a higher need for status |  |
| Kegeles SS. Why People Seek Dental Care: A Test of a Conceptual Formulation. J Health Hum Behav. 1963;4:166-173. USA. | Susceptibility  Seriousness  Belief that they COULD take beneficial action was significant when interacting with susceptibility  Fatalism beliefs less frequent preventive visits and more frequent if concerned aesthetically for their child (not self)  Past behaviour  Dental anxiety (weak effect) | Education, supervisory Factory supervisory level |  |
| McKinlay JB. Some approaches and problems in the study of the use of services--an overview. Journal of Health and Social Behaviour. 1972;13:115-152. |  | Proximity to services may increase use, but certain groups will still under-utilise when services are a stones’ throw away.  Cues to action may differ for social groups  The process of care seeking involves being willing to surrender to the care giver and admit a need for help, as well as considering the views that others around may have of their condition (stigma). There may be less stigma of having poor oral health/missing teeth/poor appearance in a low SES which is necessary in the process of seeking care  Low SES groups may be more unwilling to ask for help. |  |
| Mechanic D, Volkart EH. Stress, illness behaviour and the sick role. American Sociological Review. 1961;26:51-58. USA. | Perceived stress | Tendency to adopt a sick role. The structure of the family may be a more influential variable than age, gender and SES in illness behaviour |  |
| Parsons T. The Social System. New York, The Free Press. 1951 USA. |  | Illness is not a biological or psychological condition, or an unstructured event. It is a social role: the ‘sick role’ characterised by duties and obligations of the parties to the doctor-patient relationship, and is shaped by the society to which the parties belong. There are a set of defined roles, norms and expectations for the parties of the illness event that allow for resolution of the event of illness and return to health.  Entry to the ‘sick role’ depends on 1. Individual absolved of responsibility – otherwise might be accused of malingering, 2. Serious enough to justify exemption from normal role functioning 3) obliged to accept care in order to get better  Parson has a rigid portrayal as a doctor-sick dyad where the Dr is dominant and authoritative and the pt is accommodative and co-operative to the Drs’ task. |  |
| Rosenstock IM. Why people use health services. Millbank Memorial Fund Quarterly 1966;44: 94-124. | 1. Subjective state of ‘readiness to take action’ relative to the health condition – depends on perceived likelihood of ‘suceptibility’ and ‘severity’  2. Potential for benefits – efficacy to reduce suceptibilitty and seriousness weighed against financial and psychological costs (Perceived barriers)  3. Cue to action – internal (perception of body state) and external – mass media communications etc |  |  |
| Young JT. Illness behaviour: a selective review and synthesis. Sociology of Health & Illness. 2004;26:1:1-31. USA. |  | The greater the distance the pt must travel, the less likely they are to do so.  Parsons assumes that the power to manage the illness resides with the care-giver. However doesn’t recognise the rise of medical information systems, the internet, self-help groups as well as the control of physician decision making by corporate interests. The amount of information a pt has changes the power relationship between pt and dentist.  Differences in responses to pain can be cultural and explained by the different socialisation processes of the patients.  Low SES groups may have less information and therefore a greater power differential  Increased education provides better health care knowledge and knowledge utilisation. Education interacts with the social context which modifies the final effect on illness behaviour  Social networks act by giving social support as well as transmitting information and in the socialisation process. | Modes of payment such as insurance, self-payment and government assistance affect the use of services |
| Zola IK. Pathways to the doctor — from person to patient. Soc Sci Med. 1973;7:677–689. |  | There are five triggers to spur readiness to act into behaviour. These are incidents which threaten people`s notions of normality, and vary in importance for different social groups. Anglo-Saxons most readily respond to the nature and quality of their symptoms as opposed to for example social sanctioning.  1. Inter-personal crisis  2. Perceived interference with work activities  3. Perceived interference with social/leisure activities  4. Sanctioning by others who insist help should be sought.  5. Symptoms persist beyond arbitrary time limit set by the individual |  |
| Goffman E. Stigma: Notes on the management of spoiled identity. New York: Prentice Hall. 1963. | There are two types stigma: ‘discrediting stigmas’ (those obvious on social interaction e.g. in a wheelchair; perhaps decayed anterior teeth), and ‘discreditable stigma’ (where they are not obvious on social interaction but is potentially disruptive if discovered). Since the oral cavity is hidden to some extent in social interaction, going for a check-up may risk ‘discreditable stigma’. | Stigma is ‘an attribute that is deeply discrediting’ (such as race, criminality, but may be illness). A stigma causes a gap between the social identity that we assume that others have, and their actual social identity. There is a problem in managing the social interaction between the stigmatised and ‘normal’ people since it is potentially disrupted by awkwardness. The stigmatised person feels uncertain about how they will be treated. |  |
| Mechanic D. Sociological dimensions of illness behaviour. Soc Sci Med. 1995;41:1207-1216.  USA. |  | Illness behaviour is ‘the varying ways individuals respond to bodily indications, how they monitor internal states, define and interpret symptoms, make attributions, take remedial actions and utilise various sources of formal and informal care’.  Illness behaviour is socio-cultural and has a social construction  ‘The patient presents to the physician from a ‘micro-political situation that reflects and supports broader social relations and politico-economic power’ (pg 1209).  ‘Adaptive coping behaviours and perceptions shape the entire illness behaviour response set, including the choice of care giver, the success of the interaction between the patient and dentist, patterns of healthcare practice, degree of compliance and degree of recovery or cure’. ‘The interaction between behaviour and perception is a continuous process throughout the illness.’ |  |
| Suchman E. Social patterns of illness and medical care. Journal of Health and Human Behaviour. 1965;6:2-16. USA. |  | ‘Cosmopolitan’ types of groups are more likely to hold a ‘scientific orientation’ while ‘parochial’ groups adhere to a popular health orientation. This means that there is more likely to be congruence between a complex, highly organised medical service in a urban, cosmopolitan community or a small, personal medical practice in a parochial, rural area. Incongruence and conflict are more likely to results from imposing a complex medical organisation upon a cosmopolitan area. |  |
| Cockerham W. Medical Sociology. Upper Saddle River, New Jersey: Prentice Hall. 2000  USA |  | Social networks include family, friends and co-workers |  |
| Pescosolido B. Beyond rational choice: The social dynamics of how people seek help. The American Journal of Sociology. 1992; 97:(4)1096-1138. USA. |  | Family, neighbours and friends influence decisions throughout the process of seeking care, unless it becomes a habit. |  |
| Levy R. Social support and compliance: a selective review and critique of treatment integrity and outcome measurement. Social Science & Medicine. 1983;17:1329-1338. USA. |  | The mechanisms by which social networks affect behaviour are:  1. Directly modulates via family and peers,  2. Transmits beliefs through the socialisation process,  3. Reinforces health and unhealthy behaviours by activities, verbal stimuli and example,  4. Reduces social support or increases social impediments to care |  |
| Rogers RW. Cognitive and physiological processes in fear appeals and attitude change: a revised theory of protection motivation. In: Cacioppo JT, Petty RE (eds). Social Psychophysiology: a sourcebook. New York: The Guildford Press. 1983; 153-176. | Intention to protect oneself depends on:  1) Perceived severity  2) Perceived probability of the occurrence, or vulnerability  3) Efficacy of the recommended preventive behaviour (perceived response efficacy)  4) Perceived self-efficacy (i.e., the level of confidence in one’s ability to undertake the recommended preventive behaviour).  Protection motivation is the result of the threat appraisal and the coping appraisal. Threat appraisal is the estimation of the chance of contracting a disease (vulnerability) and estimates of the seriousness of a disease (severity). Coping appraisal consists of response efficacy and self-efficacy. |  |  |
| Binkley CJ. A theory-based intervention to increase dental utilization by disadvantaged children. University of Louisville. 2007.  Louisville, USA. |  | Oral health beliefs  Trust in dental providers  Prior experience of using Medicaid providers, Caregivers own prior experiences |  |
| Harris RV, Haycox A. The role of team dentistry in improving access to dental care in the UK. British Dental Journal. 2001; 190:7:353-6.  United Kingdom |  | Relative availability dentists in low SES areas. | Dental remuneration  Eligibility for free care  Regulation of dental practice location  Policies such as income protection for dentists.  Skill mix regulation |
| Hittner J B, and Hemmo R. Psychosocial predictors of dental anxiety. Journal of Health Psychology. 2009;14:53-9. | Apprehension before visiting - anxiety  High Internal Locus associated with higher compliance with health service provider’s instructions  Self-consciousness - especially public self-consciousness is associated with dental anxiety e.g. leading wanting to avoid conflict in the ‘elite situation’  Satisfaction with life: Higher life satisfaction associated with healthy behaviour  Thought suppression: dental anxiety is associated with more frequent thought suppression, and this in turn is associated with more frequent and intrusive negative dental-related thoughts because of the rebound effect (more intense thoughts because they are suppressed). | Gender | Income |
| Savolainen J. A strong sense of coherence promotes regular dental attendance in adults. Community dental health. 2004;21:271-6. Finland. | Sense of Coherence (SOC) | Education interacts with SOC (higher correlation in higher education groups) |  |
| Anderson R and Thomas DW. ‘Toothache stories’: a qualitative investigation of why and how people seek emergency dental care. Community Dental Health 2003; 20:106-111. |  | Care seeking is not a purely symptom-driven and individual phenomenon. It is a social process involving a range of non-physiological triggers.  Low SES attach less significance to symptoms and may delay and self-medicate until reach a level where they cannot cope without seeking information or care |  |
| Horowitz AM, Kleinman DV. Oral health literacy: a pathway to reducing oral health disparities in Maryland. Journal of Public Health Dentistry. 2012;72(1)26-30. USA. | Health literacy.  Oral health literacy is ‘an intricate process of acquiring and trusting information, skill development, grasping concepts and technique intensive protocols and applying them appropriately’. | Medicaid users do not rate the ‘listening skills’ of dental providers |  |
| Gelberg L, Andersen RM, Leake BD. The behavioural model for vulnerable populations: Application to medical care use and outcomes for homeless people. Health Services Research. 2000;34:6. USA. | Functional limitation  Worry about dental condition  Perceived benefits of visiting | Mode of shelter for the homeless |  |
| Andersen RM, Davidson PL. Chapter One: Improving access to care in America: Individual and contextual indicators. In: Andersen RM, Rice TH, Kominski GF. (eds.) Changing the U.S. health care system: key issues in health services policy and management. 3rd ed. San Fransisco: Jossey-Bass. 2001;1-30. USA. |  | Employment level  Crime rate  Gender  Marital status  Community or organisational values and cultural norms; political perspectives on how services should be made accessible  Service organisation: amount and distribution and type of personnel, quality | Health policies from local to national include private sector pricing and marketing: finance available to pay for the services; relative pricing of medical care compared to other goods and services. |
| Reisine S, Litt M. Social and psychological theories and their use for dental practice. International Dental Journal. 1993;43:279-87.  USA. | Need (DMFT, periodontal pockets, perceived need) | Age at first visit (indicator of family concern)  Gender |  |
| Antonovsky H, Sagy S. The development of a sense of coherence and its impact on responses to stress situations. Journal of Social Psychology. 2001;126:213-225. Israel. | Sense of Coherence (SOC) and trait anxiety (chronic disposition to react with anxiety) are ‘opposite sides of the coin’  SOC negatively related to state anxiety (emotional responses to stress) in a ‘normal’ potentially ego-threatening stress situation. | Close family ties (communication and emotional closeness) and Stability of the community in which adolescents live influence SOC |  |
| MacGregor IDM, Regis D, Balding J. Self concept and dental health behaviour in adolescents. Journal of Clinical Periodontal. 1997; 24:335-339.  United Kingdom. | Self esteem (role is strongest)  Locus of Control |  |  |
| Cohen LK. Converting unmet need for care to effective demand. International Dental Journal. 1987;37:114-116. | Individual barriers | The dental profession | The environment |
| Bandura A. Social cognitive theory: an agentic perspective. Annu. Rev. Psychol 2001; 52:1-26. | The human mind is generative, creative and not just reactive. People are not just onlookers of their experiences, but they are agents who produce the experience and are therefore dependent on the type of social and physical environment they select and construct.  A central mechanism of agency is people’s beliefs in their capability to exercise control over their own functioning and environmental events.  Another core human feature of agency is self-reflection – where people address conflicts in motivational inducements to choose one action over another.  Self-efficacy influences whether people think pessimistically or optimistically in ways that are self-enhancing or self-hindering. | Pursuing an active life increases the level and type of fortuitous encounters people will experience.  Perceived Collective agency: is an emergent group-level not simply the sum of the efficacy beliefs of individual members. |  |
| Luzzi L, Spencer AJ. Factors influencing the use of public dental services: An application of the Theory of Planned Behaviour. BMC Health Services Research. 2008;8:93-107. Australia. | Perceived behavioural control acts indirectly through intention and also directly therefore reducing structural barriers  Beliefs about preventing tooth decay  Dental anxiety | Norms and beliefs of family and friends |  |
| Becker MH, Maimon LA. Socio-behavioural determinants of compliance with health and medical care recommendations. Medical Care. 1975;13:10-24. USA. | Perceived vulnerability is necessary but NOT SUFFICIENT- requires perceived seriousness  Lower ‘faith in dentists’ associated with lower preventive dental use (view of efficacy) | Non-compliance with physicians recommendations most common with low SES groups.  Social influence – socialisation and pressure of social group conformity, encouragement of family and friends  Limited information networks may mean that perception of the available of care is inaccurate and perceived costs of obtaining care greater for low SES groups.  Reliance on lay referral networks and existence of institutional distrust may mean reduced view of efficacy in low SES groups.  Perceived vulnerability may be reduced because this involves a future orientation which is not present in low SES groups.  Poor communication during the care experience may lower subsequent care use.  Continuity of dentist personnel is important (building communication).  Circumstances where tension is not released and where the dentist is formal, rejecting, controlling and disagrees completely with the patient or interviews the patient at length without subsequent feedback leads to higher rates of non-compliance. |  |
| Fiske J, Gelbier S, Watson RM. Barriers to dental care in an elderly population resident in an inner city area. J Dent 1990;18:236-242 | Beliefs dentures should last a lifetime  Mobility issues  Fear of dental pain and worry about not coping with new dentures or losing remaining teeth.  Low expectations based on previous experiences | Availability of local, ‘satisfactory’care. | Cost of care. |
| Frazier PJ, Jenny J, Bagramian RA, Robinson E, Proshek JM. Provider expectations and consumer percpetions of the importance and value of dental care. AJPH 1977;67:37-43. US |  | Low SES did not value oral health RELATIVE to other goods and services  Although they believe dental care is important – actually getting care is lower on the list of financial demands patients have to face.  Dentists presume low SES patientsh place a lower value on dental care than they actually do.  There are discriminations for those who do not appreciate dentists’ services – dentists ‘categorise pts into those who care about their teeth and those whose mouth is a mess’ |  |
| Freeman R. Social exclusion, barriers and accessing dental care: thoughts on planning responsive dental services. Braz J Oral Sci 2002; 1:34-39. United Kindgom | Stress and depression  Co-morbidities – poor dental health as well as other health problems. | Segregation  Housing  Lone parenthood  Sensitivity of dental staff to patients needs and attitudes  Factors above the level of the individual are important and barriers should be viewed as ‘accessibility factors’ and enablers as ’inhibitors’ because a more dynamic model is needed | Welfare changes  Long term unemployment |
| Coolidge T, Skaret E, Heima M, Johnson EK, Hillstead MB, Farjo N, Asmyhr O, Weinstein P. Thinking about going to the dentist: a contemplation ladder to assess dentally-avoidant individuals’ readiness to go to a dentist. BMC Oral Health 2011;11:4-16. US. | Importance of good dental health  Only very weak association between dental fear and intention |  |  |
| Cattell V. Poor people, poor places and poor health: the mediating role of social networks and social capital. Soc Sci Med. 2001;52:1501-1516.  United Kingdom | Immune response  Stress response  Loss of self esteem  Lack of hope and fatalism  Poverty can be so overwhelming people give up trying. | Fatalism relating to one’s own life and health and the way society works in general, and political cynicism can be an indicator of low social capital.  Networks provide social support, self-esteem, identity and perceptions of control.  Homogenous networks can have bounded reciprocity and give social support.  A lack of social cohesion is implicated through mechanisms such as shame, disrespect, social anxiety and perceptions of inferiority induced by interacting with people of higher social status. | Tackle economic inequality to promote social cohesion |
| O’Toole B. Promoting access to oral health care: More than professional ethics is needed. Journal of Dental Education. 2006;11:1217-1220.  USA. |  | Dentists will feel a professional obligation to provide care for people regardless of ability to pay only if this matches or resonates with their own personal values or their understanding of the values held by their profession. The stronger motivation comes from professional peer pressure rather than professional ethics or personal values  Need to have professional status or patients to feel comfortable in being vulnerable to them  Dental practice leaders do more prominently display commercial rather than universal access values. |  |
| Mackian S, Bedri N, Lovel H. Up the garden path and over the edge: where might health-seeking behaviour take us? Health Policy and Plann. 2004;19:137-146. United Kingdom | Social cognition work assumes behaviour to be understood best in terms of an individual’s perception of their social environment – a mixture of demographic, social, emotional, cognitive factors, perceived symptoms, access to care and personality – within this is the Health Belief model – criticised as over-emphasising the  rational nature of decision making. | Reflexive communities reflect on particular ways of behaving, thinking and reaching decisions  Information availability is only one part of the equation, there is a wider ‘aesthetic reflexivity concerned with ‘making choices about and/or innovating background assumptions and shared practices upon whose bases cognitive and normative reflection is founded. |  |
| Finch H, Keegan J, Ward K, Sanyal Sen B. Barriers to the recipt of dental care – a qualitative research study. London: Social and Community Planning Research, 1988. | Perception of cost of dental care may postpone a dental visit, especially following a lapse in attendance. Confusion, suspicion and ignorance about the system of charging for care.  Fear: of pain, of a specific treatment, of possible reprimand, or other potential embarrassment/discomfort.  Vulnerability: a relinquishing of control in the sensitive area of the mouth. | The journey to visit the dentist, including time and cost, were significant in rural areas, and also impacted upon selection of dentist  Disruption to working peoples' routine to organise and attend appointments  Disruption to a pattern of dental attendance upon leaving school, due to apathy and inertia, also competing time and affordability priorities.  Patients perceive dentists as highly paid – so wanting to treat patients as much, and as fast as possible to achieve this income. |  |
| Pavi E, Kay EJ, Stephen KW. The effect of social and personal factors on the utilisation of dental services in Glasgow, Scotland. Community Dental Health 1995;12:208-215 | Value placed on restored teeth  Dental anxiety  Perceptions about denture wearers | Appointment times means lost pay.  High SES more likely to perceive that their dentist is too far away. |  |
| Suchman E. Stages of illness and medical care. Journal of Health and Human Behaviour. 1965a;6:114-128. USA |  | There are 5 stages in illness behaviour  1. The symptom experience stage – there are 3 parts – physical, cognitive and emotional – the patient recognises the fact they are sick.  2. Assumption of the sick role - patients may seek advice from lay networks.  3. Medical care stage – decision to seek scientific as opposed to lay care.  4. Dependent patient role stage – pt transfers control to the dentist for their treatment and decision making.  5. Recovery – pt returns to normal role functioning.  The greater the severity, seriousness and incapacitation, the greater the level of contact with the doctor.  Because poor oral health is often not considered serious, low SES groups have less contact |  |
| Phillips KA, Morrison KR, Andersen R, Aday LA. Understanding the context of healthcare utilisation: assessing environmental and provider-related variables in the Behavioral Model of Utilisation HSR 1998;33:571-560. | Out of pocket expenses | Having a regular source of dental care.  Location of provider.  Provider characteristics (specialty)  Feedback loops are in place however and there is a need for a more dynamic model. | Healthcare system characteristics  Medicaid policies  Population density |