



Do Psychosocial Risk Factors Influence Health in Community Settings?

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Background

There are unacceptable inequalities in people's experience of health between different geographical areas and between different groups of people within the same area.¹⁻³ Evidence that improves our understanding of the risk factors that contribute to health inequalities can inform strategies to address this problem. Such evidence could suggest points of intervention and facilitate the targeting of resources more effectively on measures that will reduce ill health and its causes in the community.⁴

Where we live, what we do and how we relate to those who live around us may all affect individual health in a complex variety of ways.^{1 2 5} Social scientists have shown that the social patterning of health is related to income and wealth. However, epidemiological research has also sought to identify other kinds of risk factors that link people's health to their social environment.⁵ Whether this exploration of non-economic risk factors represents a move away from the income-centred approach or simply a broadening of perspective has political implications (e.g. regarding the perceived importance of wealth distribution in public health policy),⁶ but there is evidence to suggest that researchers and policy-makers should take a broader view in their attempts to identify the causes of ill health and health-damaging behaviours in communities. For example, a recent study of the so-called 'Glasgow effect' has found that material deprivation does not explain why poor mental health, bad diet and men's alcohol consumption amongst that city's population exceed levels experienced by similarly deprived populations across the rest of Scotland.⁷

If a community's 'excess ill health' (in this instance taken to mean ill health that exceeds what one would expect given the economic status of individuals in that community) is substantial, then there is an important justification for public health researchers and strategists to identify the risk factors that contribute to that excess - so they can be tackled. Those risk factors may also help us understand some of the mechanisms through which relative poverty leads to illnesses amongst people living in countries that are considered (in global terms) to be affluent.⁸

In recent years, the effects of psychosocial risk factors on population health has featured heavily in epidemiological research literature as well as public health policy strategies in Scotland, the rest of the UK and elsewhere.^{1 5 9 10} Psychosocial epidemiology explores the way peoples' interactions with their social environments may influence health either directly (e.g. through biological responses to what is commonly called 'stress') or indirectly through health behaviours.⁹ This research has been influential. For example, it has encouraged policy-makers to develop public health strategies that consider people's support networks, sense of control and empowerment, their sense of security, and the extent to which people participate in the local community and civic society.²

A range of different psychosocial risk factors have been posited as potential contributors to excess burdens of ill health and health inequalities. The evidence that describes the relative importance of these risk factors, the kinds of people they have been shown to effect (and in which setting), and the health effects that they are associated with needs to be appraised and made available to policy-makers.^{11 12} Literature reviews have synthesised epidemiological evidence describing associations between various psychosocial factors and population health characteristics in different social settings.¹³⁻¹⁵ To collate evidence for researchers and practitioners interested in community health we have conducted a meta-review (a review of reviews) exploring how psychosocial factors may relate to population health in community settings.

Defining 'Psychosocial'

A major obstacle to reviewing this area relates to the lack of consensus regarding the definitions and usage of psychosocial concepts in the research literature. Martikainen et al have argued that unspecified use of the term 'psychosocial' may have degraded its usefulness: '[i]t refers to everything and nothing in particular.'¹⁶ They suggest that more care should be taken to distinguish psychosocial factors from individual psychological factors on the one hand, and social formations and structures on the other. To Martikainen and co-authors, psychosocial factors most usefully describe a bridging or 'meso-' level between the individual and the social, and hence include such factors as support from social networks, control at work or in the home, effort/reward imbalance, security and autonomy, and work-family conflict.

A recent meta-review of non-health sector psychosocial interventions (conducted by the present authors) corroborated the view that psychosocial terminology is frequently employed without consensus or definition.¹⁷ It also found that at the level of systematic review, most of the available evidence on the health impacts of community-based psychosocial interventions came from studies of workplace psychosocial interventions. These studies were often framed round well-known theoretical models of the workplace psychosocial environment, such as the 'demand control support model' and the 'effort-reward imbalance model.' In contrast, there was far less evidence about the health effects of psychosocial interventions implemented in neighbourhood/residential settings (e.g. homes, neighbourhoods, cities etc), and the studies that were identified tended to poorly describe the hypothesised pathways connecting psychosocial factors to health in the neighbourhood. The review concluded by adding to calls made elsewhere for better theory to guide research in population health and social epidemiology.¹⁸

In terms of underlying theory, research into psychosocial factors in workplace settings is often dominated by the two models referred to above, whilst research into psychosocial factors in the broader community is arguably open to a broader, but less consistently described, array of theoretical influences.¹⁹

One of the most influential theoretical frameworks derives from Putnam's work on social capital, which he defines as 'features of social organisations, such as networks, norms, and trust, that facilitate action and co-operation for mutual benefit.'²⁰ Key to this approach is the hypothesis that strong social interactions between residents of a neighbourhood can be beneficial not only to those who interact (e.g. in terms of emotional, practical and financial forms of social support), but also to neighbours who do not take part in these interactions. These latter benefits are referred to as 'externalities' and may include increased feelings of safety, reductions in anti-social behaviour, and better services and amenities in neighbourhoods where communities are cohesive enough to give individuals and groups the confidence to engage in informal social control (e.g. intervening to prevent anti-social behaviour) and civic participation (e.g. establishing youth groups, participating in local decision-making, intervening to improve the local area, etc).

In their work on social cohesion, Stafford et al have developed a measurement tool that focuses on eight broad areas which are said to have a bearing on neighbourhood social cohesion: (1) family ties (frequency of contact with local family); (2) friendship ties (frequency of contact with local friends); (3) participation (regular participation in local organised groups, such as social, religious, neighbourhood interest, evening classes, etc); (4) integration into wider society (contact with people in the same area and outside the local area); (5) trust (e.g. the extent to which people in the area can be trusted, being afraid to walk alone after dark); (6) attachment to neighbourhood (e.g. belief that neighbours are friendly, feeling part of the area); (7) tolerance

(e.g. belief that everybody in the area should have equal rights, people in the area are tolerant of others not like them, respect for privacy); and (8) being able to rely on others for practical support (e.g. feeling comfortable asking neighbours to run errands for each other during illnesses).^{19,21}

MacIntyre et al have advocated a broader framework to describe the pathways in which neighbourhoods may effect health.²² Besides considering the physical environment, services and amenities, this framework also considers the 'socio-cultural' characteristics of a neighbourhood and its reputation. Neighbourhood characteristics cover a range of psychosocial factors including those associated with the political, economic, ethnic and religious history of a community, current norms and values, the degree of community integration, levels of crime, incivilities and other threats to personal safety, and networks of community support. Neighbourhood reputation includes how a local area is perceived by its residents, how it affects their self-esteem, who moves in and out of the area, and how the neighbourhood is perceived by service or amenity planners, providers and investors.

Siegrist and Marmot have defined the 'psychosocial environment' as the sociostructural range of opportunities that is available to an individual person to meet his or her needs of well being, productivity and positive self-experience.⁹ They emphasise the importance of self-efficacy and self-esteem. A psychosocial environment conducive to self-efficacy enables the person to practise his or her skills, to experience control in terms of successful agency. A psychosocial environment conducive to self-esteem enables the person to connect him- or herself with significant others and to receive appropriate feedback for well accomplished tasks. Self-esteem strengthens feelings of belonging, approval and success, and is contrasted with feelings of being excluded or of not getting anywhere despite one's efforts. Although his work has largely focused on workplace health, Marmot has co-authored a paper from the Whitehall study of UK civil servants (Chandola et al) that presents some evidence suggesting that low control at home associated with excessive household and family demands may have a greater adverse effect on the health of women compared with men.²³

In the design of this review, we have combined elements from this broader literature to identify psychosocial factors in the community that will form the basis of our literature search. The main sets of themes we have focused on are (a) autonomy and sense of control, (b) involvement, participation and empowerment, (c) social cohesion, trust and belonging, (d) social support and social capital, (e) social diversity and tolerance, (f) vulnerability, security or safety, and (g) demands, role conflicts or role imbalance. We have identified and synthesised findings from systematic reviews that report data on any kind of health measure in association with any of the above psychosocial factors within a home or neighbourhood residential setting. The search terms we adopted ensured that we accessed reviews which collectively considered a breadth of psychosocial factors, spanning our identified themes. Nevertheless, the output from the process has yielded evidence on a more limited range of factors, and so our findings do not address the full spectrum of themes listed above. This report summarises the evidence we identified, prioritising findings from the more robust reviews.

METHODS

Inclusion Criteria

We included all published and unpublished reports in all languages describing systematic reviews or meta-analyses, the health effects of psychosocial risk factors, or associations between health and psychosocial risk factors in residential settings. Health effects included social, psychological, and physical effects that could be measured on humans and health behaviours.

Exclusion Criteria

We excluded literature reviews that did not meet our minimal criteria (described below), descriptions of environmental or physical effects that did not include human responses to them, studies without health measures and studies reporting predicted but not observed health impacts of psychosocial risk factors.

Search Methods

We searched the following electronic databases from 1986 to date of search (at least October 2006): Centre for Reviews and Dissemination Database of Abstracts of Reviews of Effects (CRD DARE), NHS Economic Evaluation Database (NHS EED), Health Technology Assessment (HTA) Database, OVID Medline, ISI Web of Science, Social Science Citation Index, Science Citation Index, CSA Sociological Abstracts, CSA Social Services Abstracts, ASSIA: Applied Social Sciences Index and Abstracts (CSA), OVID Psychinfo, EBM Reviews - Cochrane Database of Systematic Reviews, EBM Reviews ACP Journal Club.

We used DARE's database-specific strategies to search for systematic reviews and meta-analyses (<http://www.york.ac.uk/inst/crd/search.htm> last accessed 02.04.07). Subject keywords were "(psychosocial or psycho-social or stress or involvement or empowerment or autonomy or contingency or participation or bridging social capital or control or choice or diversity or empowerment or esteem or hopelessness or insecurity or social network or social cohesion or social diversity or social support or vulnerability or security or safety or trust or demand or conflict or imbalance or allostasis or allostatic load) and (house or home or neighbourhood or neighbourhood or resident or town or city or community or inner-city or estate)."

We also searched our own personal collections, other internet resources (including the ISI Web of Science citation search tool), manually searched bibliographies and contacted experts.

Evaluation of Included Reviews

One reviewer excluded obviously irrelevant documents. Two reviewers independently appraised papers using a checklist adapted from two critical appraisal guides: CRD's DARE criteria for quality assessment of reviews (<http://www.york.ac.uk/inst/crd/report4.htm>) and a systematic review tool created by Oxman and Guyatt.²⁴ As these existing tools were developed with intervention studies primarily in mind, some changes were made to make our checklist more appropriate for appraising reviews of descriptive epidemiological studies.

The checklist was based on seven criteria described in Figure 1. A quality index, based on these criteria, could range from two (numerous flaws) to seven (minimal flaws). We required, as a minimum, that systematic reviews included a defined research question and an explicitly described search strategy. A distinction was made between higher and lower scoring systematic reviews: reviews that scored higher than four were placed in the 'higher' category. In recognition that the quality of a review is distinct from the quality of evidence included in a review, we also recorded the number of longitudinal studies and the size of studies included in each review (when reported by the reviewers). Disagreements were resolved by the reviewers on a case by case basis.

Figure 1. Criteria Used To Assess Quality Of Reviews Based On Criteria Used For The Database Of Abstracts Of Reviews Of Effects (CRD DARE)

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| <ol style="list-style-type: none"> 1. Is there a well defined question? <ul style="list-style-type: none"> • Review question/hypothesis (or an aim from which a specific research question can be extrapolated) is provided in the text (+) • Review question, hypothesis or aim (as described above) that address at least two of the following components: study design, participants, risk factors and outcomes (++) 2. Is there a defined search strategy? <ul style="list-style-type: none"> • More than one named database or one named database and evidence of manual searching (e.g. reference checking, handsearching journals, expert contacts, internet searching) (+) • More than one named database and evidence of manual searching (++) 3. Are the inclusion/exclusion criteria stated? <ul style="list-style-type: none"> • Inclusion/exclusion criteria address two of the following: study design, participants, risk factors, and outcomes (+) • Inclusion/exclusion criteria address all of the following: study design, participants, risk factors, and outcomes (++) 4. Are study designs and number of studies clearly stated? <ul style="list-style-type: none"> • Study designs or number of studies clearly stated (+) • Study designs and number of studies clearly stated (++) 5. Have the primary studies been quality assessed? <ul style="list-style-type: none"> • Inclusion was restricted, or the quality of studies indicated using specified criteria relating to study design (+) • The validity of included studies was assessed systematically using specified criteria, a checklist or scale (++) 6. Have the studies been appropriately synthesised? <ul style="list-style-type: none"> • Synthesis involved some safeguards against, or presents data enabling the exploration of, the effects of study design on findings (+) • In addition to the above criteria being met, details of the population/setting, risk factor, outcome and numerical results for every included study are presented in the tables and/or text, or in a chart in the case of meta-analyses (++) 7. Has more than one author been involved at each stage of the review process? <ul style="list-style-type: none"> • More than one author involved in quality appraisal (+) • More than one author involved in all stages of the review process (++) |
|--|

Scoring: ++ = 1; + = 0.5.

Reviews must have scored at least two to meet minimum inclusion criteria as systematic reviews

As some of the reviews were over a decade old we 'updated' included reviews using the ISI Web of Science citation search tool. We searched for primary studies that referenced any of our included reviews and presented the results of similar analysis in terms of risk factors and settings. We only included longitudinal studies with an initial response of at least 100 participants, thereby excluding very small studies and cross-sectional data from our 'update' searches.

Data Extraction

Information reported in each review on the number, design and findings of relevant primary studies was extracted, as well as data on environment, participants, psychosocial variables and health measures. Data on primary studies included in each review were extracted from the reviews rather than from the primary studies themselves (except in the case of the primary studies identified in the web of science citation search).

When categorising reviews by psychosocial risk factor, it was recognised that there could at times be considerable overlap between different terms, particularly as terminology and definitions may not always be used consistently. To some extent, this ambiguity also occurred with some of the health measures. For example, the term 'conduct disorder' is a medical label but some components of conduct disorder such as violence, sexual risk taking and substance abuse may be considered to be behaviours that might influence health rather than health outcomes *per se*.

To categorise reviews by psychosocial environment, we referred to Martikainen et al's requirement that 'psychosocial' should be a bridging concept that links psychological factors to specific environments.¹⁶ For example, if a review provided evidence on how a health outcome may be associated with social support (or lack of it) received from participants' spouses at home, we categorised the psychosocial environment as 'home.' If a review provided evidence on support from friends or neighbours outside the home, we categorised the psychosocial environment as 'community.'

Often reviews provided evidence pertaining to both types of psychosocial environment. Some reviews reported on a range of risk factors, not all of which met our operationalised definition of a 'bridging' psychosocial factor. In such cases, we only extracted and reported data relevant to psychosocial factors that met our inclusion criteria.

Data were abstracted by one reviewer (ME) and checked by another (ST). When more than one review reported on the same risk factors and health outcomes we prioritised findings from the more robust reviews.

RESULTS

Altogether 9638 titles and abstracts were screened by ME to exclude obviously irrelevant publications. 306 publications were obtained and considered for suitability. Of these, 62 reviews were considered to have met the subject inclusion criteria and were critically appraised. 31 reviews met minimum critical appraisal criteria (scoring 2 or over: see Table 1).^{23 25-55} Most of the reviews reported on studies conducted in North America (particularly USA) and to a lesser degree northern Europe, although some evidence also emanated from the southern continents.

Psychosocial Factors

The 31 included reviews provided evidence exploring the health associations of a range of different psychosocial factors that had been explored in reviews that met our inclusion criteria. We have categorised them into various overlapping domains (see Table 1). Not all the psychosocial risk factors that fell within our inclusion criteria were readily identifiable in the review literature (for example, we found little evidence on autonomy/control, trust, and sense of belonging). Hence the final list of risk factors we identified represents a subset of those eligible for inclusion. We identified reviews that explored health associations with the following domains of psychosocial risk factor: social support, social networks, social capital, social cohesion, collective efficacy, participation in local organisations (often religious organisations), demands, support within familial and marital relationships, family structure, exposure to community violence or anti-social behaviour, exposure to discrimination, and stress related to acculturation to western society. Most reviews investigated the health associations of more than one psychosocial risk factor. More than two thirds of the reviews explored health associations with social support or social networks or, more usually, a combination of the two.

Health Outcomes

Some reviews focused on a single specific health outcome, whilst others included a range of health outcomes (see Table 1). Four reviews focused on coronary heart disease^{25 26 37 38} and a fifth investigated the incidence of high blood pressure.⁴⁵ One review focused on cancer, particularly breast cancer.²⁷ Five reviews looked at elderly populations: one focused on mortality³⁵; two on dementia^{32 39}; and two others included dementia in a range of other measures of physical and mental health amongst elderly people.^{33 40} Studies reporting findings from measures of mental health (often accompanied by measures of physical health) were included in over half of the reviews we identified. Usually they reported measures of general health and wellbeing, but psychosocial factors associated with depression²⁸, postpartum depression²⁹ and bi-polar disorder⁵⁵ were each reviewed specifically. We also identified evidence on conduct disorder and intellectual development amongst young people and child health measures such as birth weight, injuries and parent child attachment.^{42-44 47-49} Psychosocial factors associated with health behaviours in areas such as sexual health, substance abuse and violent conduct and injury were also investigated in several of the reviews.^{36 41 43 44 46 54}

Participants and Environment

The evidence on associations between psychosocial factors and population health identified in this review typically describes these relationships in the context of adult populations in community environments. Only two included reviews explored psychosocial factors that related exclusively to the home environment. These investigated the links between marital/family relationships and the health of adult populations.^{35 55} Of the remaining reviews, about half explored both home and community psychosocial environments, whilst the rest focused exclusively on communities. As the reviews tended to provide relatively few details on the settings of included studies, it is not possible to provide detailed definitions of what is meant by the term 'community' for each study, or even each review. Its meaning varied both in terms of scale and in terms of whether 'community' was being used to describe social networks, a geographical location (e.g. residential neighbourhood) or (more usually) a hybrid of the two.

Most of the reviews focused on studies of adult populations, or a range of populations in which adults predominated. However, four reviews explored psychosocial risks factors for elderly populations^{33 35 39 40}, three focused on parents²⁹⁻³¹, seven on young people^{42-44 47-49 54} and two focused on migrant, immigrant and ethnic minority groups.^{45 46}

Findings from Higher Scoring Reviews

Of the 31 reviews we identified, 11 scored >4 out of 7 from the critical appraisal.^{25 27 34 35 39 40 42 45}
^{51 52 55} All but two^{34 40} of these more robust reviews have been published within the last five years. Even amongst the higher scoring reviews, reporting of numerical data and the methodological characteristics of primary studies was at times sketchy or absent. In terms of study quality, we have distinguished between longitudinal studies and cross sectional studies or case histories, on the assumption that a well conducted longitudinal study is likely to provide more reliable findings than a well conducted cross sectional study. We would also have reported on the number of case control studies, but only one of the higher scoring reviews clearly identified these.³⁹ Three of the reviews reported that only longitudinal studies were included^{25 27}³⁵, whilst a further six included longitudinal studies along with studies with other designs (e.g. cross-sectional).^{25 34 39 42 45 51} Summarised findings from all 11 of these reviews have been ordered by psychosocial risk factor and are presented in Table 2.

Social Support

Social support and social networks were the most common psychosocial factors to feature in the included reviews. These risk factors relate to both the number and quality of a person's social contacts and may include emotional and practical support as well as frequency of contact. Social support and social networks were not always clearly described or distinguished in the included reviews. The same can also be said of the primary studies that feature in many reviews. For example, Kuper et al (who authored the most robust review on social support and coronary heart disease we identified) state that "[d]espite the interest in social support, there is little consensus on how it is measured, therefore variables ranging from 'high love and support from wife' to 'social network index' to 'social isolation' were included."²⁵

Kuper et al reviewed prospective cohort studies of psychological and psychosocial factors in the aetiology and prognosis of coronary heart disease. In their appraisals, the review's authors considered studies that found relative risks ≥ 2.00 to be strongly supportive that low social support increased people's risk of CHD, and studies that found relative risk ≥ 1.50 and < 2.00 were considered moderately supportive. This categorisation of findings by relative risk did not take into account confidence intervals (hence – for example, $RR=1.70$, $95\% CI=1.23-2.34$ would be classed as moderately supportive). Out of 21 prognostic studies of social support, 10 were strongly supportive of an inverse association between social support and CHD whilst four were moderately supportive. The studies that strongly supported the hypothesis that low social support increased risk of CHD included some of the most robust evidence, including one of the larger studies (sample size = 1368) and two with extended follow-up (nine and ten years). No studies showed negative outcomes. Some large studies, including the largest, found little association.²⁵

In a wide ranging review of evidence on risk factors for (primarily breast) cancer, Garsen identified six studies that found a relationship between social support and disease progression.²⁷ There was little reporting of numerical data in this review. In one study of 224 women with newly diagnosed breast cancer, the survival rate in women without a confidant was 56% compared to 72% for women who had had at least one type of confidant. The same study also identified a dose–response relationship: survival rates at seven years increased stepwise in women reporting no, one, or at least two types of confidants, respectively. The five other studies showing a relationship identified associations between social support measures and disease progression. Experiencing support, having confidants, having a network of relatives and friends, and being involved in organizations was related to a longer disease-free interval and longer survival. However, nine studies found little or no conclusive evidence of an association between social support and cancer.

The least recent of the higher scoring reviews of social support (published 1994) was a meta-analysis by Smith et al to determine the effects of different types of support on physical, psychological, and stress-related health outcomes.³⁴ The reviewers pooled data from 60 published and seven unpublished studies (n = 11 to 3,725 participants per study). Social support was categorized as quantitative (e.g. size of social network), qualitative (e.g. availability of supportive people) and functional (informational or emotional support). Outcomes were categorized as physical health, psychological health, stress and satisfaction. Associations were usually positive but small in magnitude (ranging from -0.02 to 0.22: no confidence intervals reported). Effect size results were equivalent when comparing studies grouped by gender of participants, study design and study quality. The authors concluded that the findings were not sufficient to support the hypothesis that social support has significant positive associations with health.

The association between marriage and health/mortality has been demonstrated in a number of studies, although the hypothesis that support from a spouse has a protective effect is only one of a number of possible explanations for this association (other possible explanations include a selection effect – i.e. healthier people may be more likely to get and stay married; or the likelihood that relationship breakdowns or bereavements may be health damaging). A meta-analysis pooling 53 independent cohort studies, consisting of more than 250,000 elderly subjects, found that the overall relative risk (RR) for married versus non-married individuals (including widowed, divorced/separated and never married) was 0.88 (95% Confidence Interval: 0.85 to 0.91).³⁵ This estimate did not vary by gender, study quality, or between Europe and North America. Compared to married individuals, the relative risk of death for widowed participants was 1.11 (95% CI = 1.08 to 1.14); for divorced/separated individuals it was 1.16 (95% CI = 1.09 to 1.23); and for participants who never married it was 1.11 (95% CI = 1.07 to 1.15). A more conservative analysis of the data still found marriage to be significantly protective, although the effect size was reduced (RR = 0.94; 95% CI = 0.92 to 0.95).

A review of risk factors in relation to an emergence of bipolar disorder found that five of seven studies discussing marital status showed that single persons tend to be associated with an elevated risk for BPD compared with married or cohabiting persons (n = 462 subjects followed up).⁵⁵ One of the remaining studies suggested that the association is limited to female subjects, while the other community survey showed no association. The review did not report numerical data.

Social Support and Participation

Regular participation in local organised groups, such as social, religious, neighbourhood interest and evening classes is often treated as a separate psychosocial factor to social support, although they may aid the development of supportive networks. It has been suggested that high levels of participation in such groups may encourage self-efficacy at both the level of the individual and the community, and that these may produce externalities that can potentially improve the health and wellbeing of people in a locality.^{19 21}

Stuck et al conducted a systematic review that included 21 longitudinal studies exploring whether social support and participation might be risk factors for functional status decline in community-living elderly people.⁴⁰ The strength of evidence relating to each risk factor was appraised by the authors of the review as follows: the highest rating went to evidence of risk factors based on at least two appropriate analyses from separate databases (excluding people with functional status impairment at baseline) reporting a significant (p<0.005) increased risk of functional status decline in people having the risk factor at baseline, as compared to people without risk factor.

The reviewers found that 'low frequency of social contact' met their criteria for the highest strength of evidence, whilst evidence on 'participation in local activities' was placed in the second highest category of strength of evidence (defined as evidence based on one prognostic study excluding people with functional status impairment at baseline, or two or more different studies that included people with functional status impairment at baseline). Greater frequency of emotional support from social networks, particularly among those reporting low frequency of instrumental support was found to have a favourable impact on functional outcomes. Instrumental support (i.e. tangible support including the provision of material aid or behavioral assistance), however, did not consistently benefit functional status. In fact, greater frequency of instrumental support was associated with increased risk of subsequent disability amongst older men.

Bernhardt et al identified three prospective longitudinal studies, all of which found evidence of associations between psychosocial factors and dementia amongst elderly populations (a fourth study focused on physical exercise).³⁹ In one study, regular participation in social and free time activities was associated with significantly reduced risks of dementia (e.g. travel: RR = 0.48, 95% CI = 0.24 to 0.94; crafts/DIY: RR = 0.46, 95% CI = 0.26 to 0.85; gardening: RR = 0.53, 95% CI = 0.28 to 0.99). In the second, a 2-fold increase in dementia risk (RR = 1.91, 95% CI = 1.12 to 3.25) and a 3-fold increase in Alzheimer risk (RR = 2.68, 95% CI = 1.49 to 4.81) was found for unmarried people. The third included study found evidence that people who live alone and people with no close social contacts have increased risk of dementia (RR=1.5, 95% CI = 1.0 to 2.1 and RR = 1.5, 95% CI = 1.0 to 2.4 respectively).

Two small case control studies (n = 120 and 90) identified by Bernhardt et al looked at familial/marital relationships and engagement in physical, intellectual and social activities, and found no significant differences when comparing participants with and without Alzheimer's disease. One case control study (n = 358) found the control group was more likely than the case group (Alzheimer patients) to have participated in various forms of intellectual and physical activities and pastimes during midlife even after controlling for age, gender, income, and education. The odds ratio for Alzheimer's disease in those performing less than the mean value of activities was 3.85 (95% confidence interval: 2.65-5.58, P < 0.001). The study authors concluded that these findings may suggest that inactivity is a risk factor for the disease or conversely that inactivity is a reflection of very early subclinical effects of the disease, or both.

Social Support and 'Social Climate'

Sellström and Bremberg conducted a systematic review of multi-level studies of the influence of socioeconomic and psychosocial neighbourhood factors on mental and physical health indicators affecting infants, children and/or adolescents.⁴² They identified 13 studies and found that on average, 10% of variation in health outcomes was explained by a range of socio-economic neighbourhood determinants, after controlling for individual and family variables. Some of these studies focused on economic determinants but seven explored the effects of psychosocial neighbourhood factors, grouped by the authors under the heading of 'social climate' and including variables such as social support and control, crime rates, active voluntary associations, residential stability, neighbourhood cohesion, and collective efficacy.

The review found evidence from three studies that support from other people during a woman's pregnancy improves foetal growth: both as an independent effect and as an interaction between individual characteristics and neighbourhood factors. In one cohort study, living in a neighbourhood where social control was perceived as good was associated with higher birth weight, but only for white women. In total, the study found that social support explained 15% of the variation in birth weight between neighbourhoods. In another, decreases in reciprocal exchange and participation in voluntary associations were significantly related to low birth weight (OR = 0.96). In neighbourhoods characterised by high criminality, a third cohort study found that the risk that women will give birth to low-birth-weight infants increased by 15% amongst women already experiencing individual disadvantage (defined by low education).⁴²

The review identified insufficient evidence from the other four (cross-sectional) studies to shed light on whether a helpful neighbourhood social climate affects childhood behavioural problems or the incidence of child maltreatment.

Religious Participation

Hackney and Sanders identified evidence of associations between religious participation, religiosity and mental health in a meta-analytical review.⁵² They reported an overall positive relationship between religiosity and mental health ($r = 0.10$, 95% CI = 0.10 to 0.11, $P < 0.0001$). Religiosity related to less psychological distress ($r = 0.02$, 95% CI = 0.01 to 0.03, $P < 0.0001$). Forms of religiosity that focused on the social and behavioural aspects of religion (e.g. attendance at religious services, participation in church activities, etc) were coded by the reviewers as 'institutional religion'. Institutional religion was found to be associated with greater psychological distress ($r = -0.03$, 95% CI = -0.05 to -0.02, $P < 0.001$) but also related to high life satisfaction ($r = 0.10$, 95% CI = 0.08 to 0.11, $P < 0.0001$). The authors provided few details of the methodological characteristics of specific primary studies.

Another meta-analysis examined the association between religiousness and depressive symptoms across 147 independent investigations ($n = 98,975$).⁵¹ Across all studies, the correlation between religiousness and depressive symptoms was 0.096 (SE = 0.0009, 95% CI = -0.11 to -0.08, $P < 0.000001$). The authors suggest that greater religiosity is mildly associated with fewer symptoms, but emphasise the heterogeneity of findings. Of 140 nonzero effect sizes (ranging from -0.54 to 0.24), 113 (81 %) supported the association whilst 27 (19%) found evidence of harmful associations. The results were not moderated by gender, age, or ethnicity, but the association between religiosity and fewer symptoms of depression was stronger in studies involving people who were undergoing stress due to recent life events. The reviews suggested, without establishing a causal direction, that negative forms of religiosity (motivated by self-seeking aims, or the desire to avoid or blame God for difficulties) were associated with higher levels of depressive symptoms, whilst more positive forms of religiosity were associated with more positive mental health outcomes.

Family Relationships and Dysfunction

In a review of risk factors associated with the emergence of bi-polar disorder, Tsuchiya identified four studies measuring varying domains of family relationships and dysfunction.⁵⁵ The evidence of an association with bi-polar disorder was inconsistent. Two of four studies investigating child–parent relationships found that a dysfunctional relationship with parents during childhood and adolescence was associated with an increased risk for bi-polar disorder. However, both findings were based on small samples of participants diagnosed with bi-polar disorder (n = 19 and 25). A much larger study (n = 5877) implied a similar association between a father’s aggression and bi-polar disorder but not a mother’s aggression; however, the association disappeared after adjusting for subjects’ psychiatric comorbidity. Another smaller study did not support the association (n = 21 patient sample). One study (n=19) suggested that marital discord between parents was associated with an increased risk for bi-polar disorder amongst offspring. Methodological and numerical data were not reported in this review.

Acculturation

Acculturation to western society has featured prominently in psychosocial epidemiological literature. This research area has been included in this meta-review because of the hypothesised role of social support and other psychosocial risk factors in mediating the health impacts of acculturation.⁵⁶ Individuals from western societies typically have higher blood pressure than those from other regions of the world and immigrants to the United States and Europe from Africa, Asia, Latin America, and Polynesia have shown higher blood pressure with increasing levels of acculturation to western society. Industrialisation, modernisation, and urbanisation within non-western countries (all of which are related to westernisation) are also associated with higher blood pressure levels.^{57 58} One hypothesis repeatedly cited in the literature states that acculturation to western society is associated with an increase in blood pressure because of stressors associated with cultural change. Nonwesterners have been characterised as having larger social networks and more social support than westerners, and as nonwesterners adapt to a western lifestyle, their level of social support decreases.⁵⁹ This decrease in support has been posited as a ‘stressor’ that may adversely affect the health of those experiencing acculturation. Alternative pathways connecting acculturation to ill health such as workplace psychosocial factors and health behaviour changes (diet, physical activity, etc.) have also been suggested.⁴⁵

Steffen et al conducted a meta-analysis of evidence on acculturation to western society and blood pressure. Only eight of the included studies were longitudinal and sample sizes ranged from 20 to 48817.⁴⁵ Across the 124 studies that evaluated systolic blood pressure, the random-effects weighted average effect size was $d = 0.28$ (SE = 0.023, 95% CI = 0.24 to 0.33, $P < 0.000001$), corresponding to an average difference of 4 mm Hg higher systolic blood pressure. Acculturated individuals had an average of 4 mm Hg higher blood compared to less acculturated individuals, which the reviewers state to be similar to the effect sizes of known risk factors for high blood pressure such as body weight, level of physical activity and work stress. Across the 114 studies that evaluated diastolic blood pressure, the random effects weighted average effect size was $d = 0.30$ (SE = 0.025, 95% CI = 0.25 to 0.35, $P < 0.000001$), corresponding to an average difference of 3 mm Hg higher diastolic blood pressure between acculturated versus non-acculturated samples. Effect sizes ranged from -0.75 to 1.83 for systolic blood pressure and from -0.44 to 1.53 for diastolic blood pressure, with the heterogeneity across studies being statistically significant for both evaluations of systolic blood pressure ($Q(123) = 2551$, $P < 0.001$) and diastolic blood pressure ($Q(113) = 2415$, $P < 0.001$), suggesting that systematic effect size variability was unaccounted for.

The reviewers reported that the effects of acculturation on blood pressure appeared to be universal, with similar effect sizes found across all regions of the world. Effects did not appear to be related to body mass index or cholesterol (which the authors use as proxies for health behaviours such as diet and physical activity) but were related to length of residence in the new culture, with the largest effect sizes seen on initial entry and then decreasing rapidly within the first few years. Sudden cultural changes, such as migration from rural to urban settings, resulted in the largest effect sizes. The authors suggest that these findings support the hypothesis that psychosocial factors relating to cultural change have a more important role in the acculturation effect than health behaviours. The reviewers did not report evidence on whether there were any specific psychosocial factors that had particularly strong associations with high blood pressure.

Evidence From the Other Reviews

The higher scoring reviews referred to above provide evidence on most of the psychosocial risk factors identified in this review. However, evidence for some risk factors (such as social capital and demands) and their health associations in specific settings have only been identified in reviews that scored four or less in our quality appraisal.

Whilst the checklists used to appraise the included reviews are based on well-established criteria²⁴, it needs to be remembered that the score 'rewards' reviewers who report the methods by which they conducted a review (e.g. by clearly describing hypotheses, literature searches, quality appraisals, the roles of independent reviewers, etc). Whilst this is both understandable and desirable, it does allow for the possibility that a robust review may have received a low score because the authors under-reported their methods, rather than because those methods were poor. In addition, some lower scoring psychosocial reviews have been published much more recently than some of the higher scoring reviews, and may therefore include more contemporary (and perhaps more robust) studies relating to a field of research that has expanded rapidly over the last few years.⁶⁰

We have therefore summarised the results of lower scoring reviews if (a) the psychosocial factors, health associations and settings they explore have not been covered by more robust reviews; (b) they present numerical data and/or details of included study designs to support their findings; and (c) they were published since 2000. These summaries are once again organised by psychosocial factor and presented below.

Social Capital

Kawachi et al reviewed 31 studies of social capital and health in community settings.³⁶ Measures of social capital included collective-efficacy, trust, cohesion, participation, attachment to community, social control and local networking, whilst health outcomes included a broad range of physical and mental health outcomes, health behaviours, violent crime and homicide rates. These included 16 cross-sectional ecological studies (presenting analysis of group level cross-sectional data) and 15 multi-level studies (from the details reported in this review, these mostly appear to have been based on cross-sectional data and combined individual and group level analysis). The authors of the review present no numerical findings but state that with few exceptions, the ecological studies have consistently found an association between social capital and population health outcomes regardless of country or the spatial level of aggregation (i.e. county, neighbourhood, district, etc). Some multi-level studies provided evidence that community level social capital measures such as collective efficacy, trust, social control and social cohesion were associated with health outcomes such as general health, child health, and lower violent crime and homicide. However, there was also evidence of little or no association. In addition, the authors identified evidence that children in poor areas with mothers reporting low community attachment were associated with fewer behavioural and mental health problems, suggesting that in some circumstances social capital may have negative associations. Hence the evidence was inconsistent.

Demands

In a review of gender differences in psychiatric morbidity among family care givers, Yee and Schulz found that female caregivers reported more psychiatric symptoms compared to male caregivers, and to non-caregiving community samples.⁵⁰ The reviewers identified evidence attributing this to excess demands related to caregiving tasks at home, disproportionately experienced by women. They also find that women may be at greater risk for psychiatric symptomatology because they are less likely to obtain support and assistance with caregiving than men.

Social Support, Cohesion and Control

Rajaratnam et al reviewed neighbourhood factors associated with maternal and child health.⁴³ One category of neighbourhood factor was termed 'social resources' and included measures of social control, cohesion, trust, reciprocity, collective efficacy, participation and community involvement. Whilst the authors were primarily concerned with identifying measurement tools for these concepts, the review provided a brief summary of findings from studies. Although numerical data are not presented, the authors state that they identified evidence of associations between social resources and infant birth weight, conduct disorder, child health and child maltreatment at the neighbourhood level.

Exposure to Community Violence and Discrimination

Research on the psychosocial impact of young people's exposure to community violence has been prompted by concern that in some communities exposure may be frequent, and that such exposure to violence (including witnessing) may be a stressful experience that requires psychological adaptation and that adverse psychological sequelae may result.⁶¹ From a meta-analysis of 37 studies of unspecified designs (combined sample: n = 17322) Wilson et al found a positive correlation between exposure to community violence and psychological distress and reported a low-medium effect size ($r=0.25$) for this relationship.⁴⁹

Similarly, there is growing scientific interest in examining the extent to which exposure to racial/ethnic discrimination may be considered as types of stressful life experience that can adversely affect health.⁶² Williams et al have reviewed associations between health and racial/ethnic discrimination.⁴⁶ The authors identified 53 studies, of which only three were longitudinal. All the studies were said to have at least one serious methodological flaw but the authors state (but without supporting numerical data) that there was 'substantial consistency' of evidence of associations, 'especially among the methodologically strongest studies.'

Twenty-eight of the 53 studies were reported to have found evidence of associations between discrimination and poorer mental health across a range of domains (well-being, self esteem, control/mastery, psychological distress major depression, anxiety disorder, other mental disorder and anger) whilst two found no associations and two found less consistent evidence of association. Nine studies reported positive associations between discrimination and physical health (i.e. self-rated health, other self-reported health, blood pressure, other cardiovascular, mortality or low birth weight), whilst three studies reported no association and three reported inconsistent associations. Of the five studies that reported on health behaviours, all found positive associations: three for discrimination and smoking, and two for discrimination and alcohol.

Socio-Marital Support

Evidence from prospective studies on the association between social support and marital support on postpartum depression has been reviewed by Robertson et al.²⁹ From three studies measuring women reporting marital problems during pregnancy as a risk factor for postpartum depression (total participants: $n > 1700$), the reviewers reported a moderate combined effect size of 0.39. The same review also included five studies that consistently showed a negative correlation between postpartum depression and emotional and instrumental support before or during pregnancy (effect size = -0.64, rated 'strong to moderate').

Another review of evidence of the association between attachment security and maternal mental health correlates found that a socio-marital support (this time a combined measure of support within and outside of marital relationships) was significantly related to parent-child attachment security.³⁰

Finally, a review of risk factors predicting geriatric health identified six studies (two longitudinal). Two studies found a positive association between social network size and health and wellbeing (including the largest longitudinal study: $n=6928$; odds ratio = 1.76 (95% CI = 1.02 to 3.02)).³³ The other longitudinal study and three cross-sectional studies found no conclusive evidence.

Health Inequalities

Studies reporting differential outcomes by gender and socio-economic group can potentially shed light on how psychosocial factors contribute to health inequalities, and help inform how interventions might be tailored and targeted to reduce such inequalities. Of the more robust reviews we identified (including higher scoring reviews, and recent reviews presenting numerical outcomes and/or outcomes that prioritise more robust evidence), nine provide some evidence of differential effects (see Table 3).^{34 35 40 42 45 49-51} The fact that this number is relatively small may reflect the poor quality of some of the reviews we identified, but it may also reflect a tendency sometimes visible in epidemiological studies and meta-analyses to seek a single overall outcome for all participants that controls for differences in gender, age, ethnicity etc, rather than to explore heterogeneity of outcomes amongst different sub-groups.¹²

Whatever the reason, the evidence of differential outcomes identified in this meta-review is far from comprehensive, and is often described verbally rather than numerically. The available evidence does, however, demonstrate the complexity of psychosocial associations with health in heterogeneous populations.

Gender

In four reviews, gender was found to have made no significant difference to associations between social support and general health; marital status and mortality; exposure to community violence and mental health; and religiosity and depression.^{34 35 49 51}

Two reviews identified psychosocial factors that had stronger, negative associations for males compared to females. One study found that greater frequency of instrumental support was associated with increased risk of subsequent disability amongst men, but not women.⁴⁰ Another found that the link between acculturation to western society and high blood pressure appeared to be particularly strong for men.⁴⁵

Another review found that women were at greater risk than men of experiencing depression related to high demands from informal care giving roles.⁵⁰ The authors found that such roles were disproportionately experienced by women, and that female care givers were less likely to obtain support and assistance than male caregivers.

Age

Whilst some of the reviews we identified focused on health outcomes associated with particular age groups (e.g. adolescents and conduct disorder, or elderly people and dementia/mortality), few presented data on psychosocial risk factors that compared a range of age groups. Those that did, found little evidence of different associations. A review of exposure to community violence and mental ill health reported that the size of relationship between exposure and symptoms did not differ by participants' age.⁴⁹ Similarly, age did not appear to affect the likelihood of people developing high blood pressure as a result of acculturation to western society.⁴⁵ One review reported that the authors had found weak evidence suggesting that the association between religiosity and depression is particularly strong for elderly people.⁵¹

Ethnicity

Two reviews found evidence that associations between psychosocial factors and health disproportionately benefited white participants, whilst disbenefits from harmful associations were disproportionately experienced by black participants. White expectant mothers who lived in a neighbourhood where social control was perceived as good were more likely to have children with high birth weights than black expectant mothers.⁴² On the other hand, associations between exposure to community violence and mental ill health were particularly strong amongst black study participants.⁴⁹ The link between depression and religiosity did not vary greatly between ethnic groups (comparing white European and European/American participants with participants from other ethnic groups).⁵¹

Educational Status

According to a study identified in one review, in neighbourhoods characterized by high criminality, the risk of giving birth to a low birth-weight infant was 15% higher for women with limited education.⁴² Hence, limited education appeared to magnify the adverse effects of neighbourhood disadvantage.

Place and Space

Little evidence was found to link associations with psychosocial risk factors and health outcomes with the countries, regions or type of area that people live in. One review of marital status and mortality reported that summary estimates from North America and Europe were highly significant and similar, whilst overall estimates from Israel and Asia were slightly higher and lower than the above estimates, respectively (with larger confidence intervals as a consequence of the smaller sample size).³⁵ A review of mental ill health and exposure to community violence found no significant difference in the size of relationship and participants' country of residence, but studies set in inner-city communities were more likely to find stronger associations than studies set in other kinds of residential area.⁴⁹

Recent Longitudinal Evidence

Our search strategy focused on systematic reviews not primary studies. The reviews we identified are unlikely to have included every relevant primary study – and they cannot include other relevant studies that post-date the reviews' publications. Whilst it would be useful to try and identify and systematically review all the relevant evidence from primary studies (rather than just those studies that feature in the review literature), the task would be an unfeasibly large one given our resources and the wide scope of this report (i.e. we have included *any* psychosocial risk factor and *any* health or health behavioural outcome).

Hence we have not sought to review all the primary epidemiological research in this field. However, we did use the ISI Web of Science citation search tool to explore whether or not there were any readily accessible robust longitudinal studies published after our systematic reviews but dealing with similar risk factors in community settings. We did this partly to assess the extent to which recent studies might supplement the evidence provided in the reviews (particularly the older reviews) and partly to see if this citation tracking technique provides an effective means of quickly 'updating' existing reviews. To use the tool, we identified the citation for each of our reviews on the Web of Science database. We then used Web of Science to list all the documents on its database that referenced those reviews. Because we wanted to focus on the more robust evidence, we selected any document that reported the findings of medium/large longitudinal studies (number of participants = >100). These were then assessed in terms of relevance (i.e. whether or not they report health associations of psychosocial risk factors in homes and/or community settings).

Only two studies were identified as a result of this exercise.^{63 64} This suggests that the citation tracking technique does not provide a comprehensive means of updating existing reviews, but it may also suggest that robust longitudinal studies are still exceptional in this field. The findings of the two studies are presented below.

In a study of 70–95 year-old-women and men (n = 911) Lund et al studied the association between change and stability in three structural aspects of social relations (contact frequency, contact diversity, cohabitation status) from 1986–1990 and mortality over the subsequent four years.⁶³ Women aged 70–74 years who developed low contact frequency or developed small contact diversity showed significantly higher mortality, adjusted odds ratio frequency of social contacts (OR: 3.78 (1.08–13.20)), adjusted OR diversity of social contacts: 3.79 (1.24–11.58). Women aged 70–74 years with continuously low contact frequency showed an increased mortality compared to women constantly experiencing high contact frequency, adjusted OR: 2.75 (1.04–7.26). Among women aged 75+ years no impact of frequency and diversity was demonstrated, whereas continuously living alone was a significant predictor of mortality, when compared to women continuously living with somebody, adjusted OR: 2.57 (1.29–5.09). In men, the authors found a significantly increased mortality among those who developed high contact frequency and developed large contact diversity OR: 3.91 (1.02–14.94) and OR: 6.04 (1.30–28.03). In summary, associations were weak for women over the age of 74, whilst low social contact was associated with high mortality amongst women aged between 70 and 74. High social contact was associated with high mortality for men. Overall, the evidence of association appears inconsistent and weak.

Schulz et al analysed data from two waves (1996 and 2001) of the Eastside Village Health Worker Partnership survey, a community-based participatory survey of African American women living in Detroit (n = 343).⁶⁴ They found that an increase over time in discrimination was significantly associated with an increase over time in depressive symptoms (b = 0.125; P<0.001) and a decrease in self-rated general health (b = -0.163; P<0.05) independent of age, education, or income.

DISCUSSION

Public health researchers and policy-makers strive to understand how social conditions give rise to patterns of health and disease in individuals and populations, so that the determinants of ill health and health inequalities can be identified and tackled. This meta-review (review of reviews) explores the nature of psychosocial risk factors and their associations with population health in home or community settings. In line with theoretical work on this subject, the review identified evidence pertaining to 'meso-level' psychosocial factors that bridged individual psychological factors to the social environments of homes and communities.¹⁶

The setting is important because psychosocial epidemiology has, it seems to us, reached a crucial stage in its development whereby policy-makers and practitioners with a wide variety of interests in community health and well-being are seeking to apply its principles and findings to different areas.^{1 2} Yet, our understanding of what psychosocial risk factors are and how they might affect health and well-being is still being debated, and the most robust and influential literature on the subject is still largely limited to one particular locus of community health -the workplace.¹⁷ It is time that the evidence base expanded to meet the demands of those who wish to use it.

The review literature on psychosocial risk factors and health in the community provides evidence that people's health, and the health of less advantaged population sub-groups, is associated with a range of psychosocial factors. This evidence of association applies to social support, social networks, social capital, social cohesion, collective efficacy, power (and powerlessness), participation in local organisations, demands, control, support within familial relationships, exposure to community violence or anti-social behaviour, exposure to discrimination, and acculturation to western society.

The evidence is of varying quality and focuses more on social support and networks than on other psychosocial factors. The included reviews also reported on studies that found no conclusive evidence of associations. This mixture of positive and inconclusive findings applies to each of the psychosocial factors covered in this meta-review. To a much lesser degree there is evidence that in some circumstances, seemingly positive psychosocial environments may have adverse effects. Overall there is evidence to suggest that psychosocial risk factors can in many cases contribute to population (ill) health and to health inequalities but the size and nature of these contributions may not be generalisable across different contexts.

Summary of Specific Findings

The more robust reviews we identified do provide some stronger evidence from longitudinal studies that the quality of social support and size of social networks may be associated with lower risk of coronary heart disease and cancer (particularly breast cancer).^{25 27}

There is also longitudinal evidence that social support (from a spouse and from social networks in the wider community) and participation in local activities may be associated with better health amongst elderly populations.^{35 39 40}

Many of the findings from this meta-review are suggestive of how psychosocial environments in both the home and community may be associated with life course 'pathways' to ill health. For example, we identified evidence that fewer social resources at a community level may be related to an increased likelihood of child maltreatment at home, whilst evidence from another review suggested that unsupportive or maladaptive family relationships at home may be associated with a higher risk of offspring developing bi-polar disorder in later life.^{43 55}

Low birth weight and illnesses affecting children are also likely to affect people's health in later stages of the life course. Multi-level analyses suggest that low birth weight is more prevalent in communities characterised by relatively low levels of social support, participation or reciprocity, or higher crime rates.⁴²

This meta-review also identified some less consistently robust evidence that children and young people from neighbourhood environments that are considered to have fewer psychosocial advantages (defined differently in different reviews, but taking into account concepts such as social capital, social resources and social cohesion) may shoulder a disproportionately high burden of physical and psychological ill health across a range of measures. They may also experience family dysfunction and parenting issues.⁴³

Adolescents growing up in a poor psychosocial environment may be more likely to engage in risky health behaviours such as anti-social behaviour and substance abuse (perhaps reflecting less exposure to informal social controls and social norms conducive to good health). Again, these behaviours may affect people's health both immediately and/or in later life. They may also have harmful effects on children born into chaotic family circumstances, and on other people in the community: for example, there is evidence that adolescents who are exposed to violence in their community are more likely to experience psychological distress.^{43 49 55}

Evidence from North America suggests that members of ethnic minorities experiencing racial discrimination may be at greater risk of psychological distress, poorer physical health, and may be more likely to engage in unhealthy behaviours such as smoking and alcohol use.⁴⁶ Immigrant/migrant populations in western or westernized countries tend to experience high blood pressure, particularly during the initial period of acculturation, which has been attributed to stress-related psychosocial factors. Populations in less developed countries experiencing rapid industrialisation (or 'westernisation') may similarly be at greater risk of high blood pressure.⁴⁵

The conclusions of most of the reviews we identified tended to focus on the positive findings. However, one meta-analysis published in 1994 concluded that although most of its included studies did identify a link between social support and better physical or mental health, the magnitude of those associations were generally small, and the overall evidence in support of the association was weak.³⁴ From our primary studies search we identified only weak evidence of associations from a longitudinal study of psychological stress and breast or prostate cancer.⁶³ Another longitudinal study found that an increase over time in discrimination was significantly associated with worsening depressive symptoms and self-rated general health independent of age, education, or income.⁶⁴

Overall, we identified some evidence that supports the view that favourable psychosocial environments are linked to better health, and some that demonstrates little or no association. We conclude that the review literature is suggestive, but not conclusive, that psychosocial risk factors can be associated with community health.

Negative Associations

The reviews we included identified little evidence of a favourable psychosocial environment being associated with unfavourable health outcomes, but there were some examples. Stuck et al found longitudinal evidence of a higher incidence of functional status decline amongst an elderly population in receipt of relatively high levels of instrumental support.⁴⁰ Two reviews provide conflicting evidence about the relationship between religiosity, religious participation and mental health.^{51 52} A review of social capital included evidence that children in poor areas with mothers reporting low community attachment were at less risk of developing behavioural and mental health problems.³⁶ The reviews provide little in the way of explanation for these findings. They could be interpreted in the light of research on the potentially negative effects of some forms of social capital: i.e. not all social relationships and not all forms of community engagement may necessarily be beneficial to all parties concerned.⁶⁵⁻⁶⁷ Some of these psychosocial factors may have a 'downside'.⁶⁷

These exceptions aside, where associations have been identified, they are overwhelmingly supportive of the view that favourable psychosocial environments go hand in hand with better population health and less risky health behaviours. However, the evidence that underpins our understanding of those associations is, judging from this meta-review, of variable quality.

Limitations

There are several limitations to the interpretation of the evidence reviewed here. These have been split under the headings 'theoretical' and 'practical' limitations and are discussed below.

Theoretical Limitations

The discipline of epidemiology has witnessed the development of a number of specialities aimed at exploring different kinds of health determinant. These include environmental, nutritional, clinical, reproductive and genetic epidemiologies, as well as continued exploration of the relationship between socio-economic status and health. The epidemiology of psychosocial risk factors may intersect with many (perhaps all) of these sub-disciplines but remains one part of a larger picture.

The evidence base that this report has explored does not provide researchers and practitioners with a means of resolving their uncertainties on key issues such as the relative importance of psychosocial risk factors compared to other types of health determinant, or the effects of attempting to modify exposure to these risk factors as part of a health improvement strategy. This was partly because of limits to our aims and scoping of the literature, but also because to our knowledge, clear quantifiable evidence capable of substantially resolving such uncertainty is not available: i.e. the literature itself has its limitations.

More research is usually recommended to reduce uncertainty, but there is also a growing body of opinion that suggests that uncertainty may be endemic in the study of complex systems.^{68 69} Complexity theory has sought to explain how positivist assumptions such as reductionism, determinism and linearity may inadequately describe some systems. The theory has its modern origins within the computing sciences but has since been taken up by researchers from other academic disciplines and more widely.⁷⁰ The theory suggests that in a complex system (of which the determinants of population health would be an archetype) the elements of the system interact among themselves, such that any modification to the system will produce results of a type and magnitude and at a time that we may not predict in advance. Complex systems are sensitive to changing conditions: an action may yield a result on one day, but an apparently identical action on a second occasion may yield a different result. Observing the system is also a form of interaction that may lead to unpredictable outcomes.

From this perspective, attempts to accurately understand the effects of specific components of a complex system, such as psychosocial risk factors in community settings, ignores both the transience and context specificity of our observations. Within such a dynamic model, no amount of evidence would enable researchers to confidently list all the major risk factors that determine public health, quantifying the degree of risk for specific illnesses and listing the types of people most susceptible to each risk. Nor could interventions to modify the system be assumed to have generalisable effect sizes.⁶⁸

Yet it is often assumed amongst proponents of complexity theory that whilst complex systems can neither be predicted nor controlled, they can be well managed or badly managed and that benefits can result from astute management.⁶⁸

Theories often come in both pure and more diluted forms.⁷¹ Although prediction may be impossible within a pure model of a complex system, it could be argued that knowledge of how components tend to interact may improve people's ability to manage parts of a system. This review has found some evidence that social contact, support and participation tend to be associated with healthier communities whilst isolation, discrimination and exposure to violence tend to be associated with less healthy communities. However, these findings cannot be relied upon to occur consistently and if relationships are contingent upon changing contexts then our learning process must be continual.

Practical Limitations

There are more specific limitations that arise from the conduct of this review.

The decision to focus on reviews, though considered necessary when investigating such a broad subject area has implications. Publication bias may affect this report on two levels. If publishers favour articles that report positive findings (as is commonly believed), the publication of literature reviews and the publication of primary studies included in those literature reviews may reflect this bias.

We have also been reliant on the authors of reviews accurately reporting the findings from the studies they have synthesised, just as those reviewers were themselves reliant upon the authors of primary studies maintaining high standards of reporting.

Some of the reviews did not appear to involve comprehensive literature searches. Furthermore, critical appraisals of the included studies were not always conducted and review findings did not always prioritise stronger evidence from methodologically robust studies over weaker evidence from less robust research. Because many of the reviews do little to shed light on the methodological quality of included studies, it is not possible to gauge the extent to which positive findings may reflect genuine associations or study bias. Overall, there is a lack of good quality systematic reviews that synthesise epidemiological evidence of risk factors in the community.

Two thirds of the included reviews were published within the last five years but six were over 10 years old. To ensure that the evidence reported is comprehensive and current, systematic reviews need to be continually updated, especially in fields where there is a lot of research activity. Updating a systematic review is a large task – sometimes as time consuming as the original review. We did not conduct 31 new systematic reviews to update the ones we identified. We did use a citation tracking tool to identify relevant longitudinal studies that referenced any of the included reviews. We suspect that the explanation for why we only found two new studies using this method lies in both the limitations of the citation tracking technique we employed, and the relatively small number of larger longitudinal studies (which are expensive and difficult to conduct) measuring psychosocial risk factors in community settings.

Research Implications

The findings from this review, and some of the limitations we have identified, have implications for future systematic reviews, as well as for theoretical work and primary empirical research in the field of psychosocial epidemiology.

Implications for Systematic Reviews

Primary research in public health has tended to include a disproportionately low number of evaluations of the effectiveness of interventions (compared to, say, epidemiological evidence of disease prevalence and risk factors). This has laid the research community open to the charge that researchers have been predominantly interested in identifying and describing problems of population health and health inequalities, rather than solutions to those problems.^{11 12}

In contrast, most systematic reviews synthesise evidence of the effects of interventions. Hence, there is a disparity. Primary research is predominantly descriptive, whilst the most robust reviews tend to eschew descriptive evidence in favour of intervention evaluations (e.g. see the systematic reviews in the Cochrane Library www.cochrane.org).

This disparity is especially problematic to those interested in 'upstream' determinants of health and health inequalities such as housing, neighbourhoods and community environments. Robust evaluations of interventions effecting such determinants are difficult to conduct and are particularly rare.¹¹ Descriptive epidemiological evidence is more readily available. So, whilst we believe that it is essential that more primary research should be directed towards evaluating complex social interventions affecting upstream health determinants, we also believe that systematic reviews should be used to appraise relevant evidence that is currently available in this field: including descriptive evidence.

Systematic reviewers have tended not to do this, which has had an impact on this meta-review. Despite our relatively broad research question we found only 31 reviews and few of these scored highly in our appraisals. If epidemiological evidence is not being identified, appraised and synthesised robustly, this is an obvious cause for concern. We therefore recommend more systematic reviews designed to identify the best available evidence on upstream determinants of health including evidence of disease prevalence and risk factors, as well as intervention studies.

The Need for Better Theory and Definitions

The main theoretical problem we identified was the lack of a consistent definition of 'psychosocial'.¹⁶ Even the most robust reviews we identified (authored in many cases by researchers who are internationally renowned for their contribution to psychosocial epidemiology) include some risk factors that appear to us to be 'psychological' rather than 'psychosocial' such as depression, anxiety, distress and type 'A' behaviour.²⁵ Whilst our own operationalised definition of 'psychosocial' is not intended to be in some way the 'last word' in defining this term, we do feel that to be of any value in its own right, the concept of 'psychosocial' must be distinguishable from (albeit related to) psychological factors and processes.

The problem of definitions was particularly acute because of this meta-review's focus on community settings outside the workplace. The task of assembling a list of risk factors that might be regarded as both 'psychosocial' and relevant to home and neighbourhood settings was not straightforward. This is because some of what are arguably the most influential psychosocial models (e.g. the demand control support model and effort-reward imbalance model) have been developed and tested in predominantly workplace setting.⁹

Whilst the concepts of demand, control and support may 'translate' from workplaces to homes and neighbourhoods in the form of (for example) housework or informal caregiving demands, participation in local decision-making and autonomy within the home, or familial and neighbourly support, there remains the issue of whether other psychosocial domains exist that are perhaps more relevant to residential rather than employment settings. Exposure to familial or neighbourhood violence and anti-social behaviour, acculturation and religious participation do not appear to us to be neighbourhood equivalents of risk factors commonly integrated into workplace psychosocial models (even though in practice workplaces may at times be settings for violence, cultural mix and religious expression). Social capital theory may provide one entry point for exploring the psychosocial environment in more residential settings, but this theory (or theories) has emerged from a different, less health-focused, research trajectory from that which has informed psychosocial epidemiology in the past, and there is still wide debate about the components of social capital and how they might influence population health.^{20 65 72-74}

To summarise, in contrast to workplace epidemiology, comparable research on health in the broader community is generally characterised by a lack of clear models to test hypotheses, a less consistent idea of how homes and neighbourhood settings might be viewed as psychosocial environments and less clarity as to which psychosocial factors could be the most important in terms of health and wellbeing.

Implications for Empirical Research

By far the most widely researched psychosocial factors we identified in this meta-review were social support and social networks. In contrast we found little evidence on empowerment, control or demands within home or community settings. This provides an interesting contrast with the literature on psychosocial factors in the workplace, in which control is often posited as the psychosocial factor with the strongest health effect.¹⁵

The predominance of social support and networks in the research literature on population health does not seem to reflect any empirically founded assumptions that these are the most influential psychosocial factors. We have identified evidence that suggests participation, cohesion, (less) exposure to violence and discrimination, can all have health associations. We can make no conclusion that one factor is more important than another: only that some feature more prevalently in the research and review literature.

Hence, we recommend that more research be conducted on other psychosocial factors besides support and networks. The list of such factors is potentially long, so it may be useful to suggest a priority. We would emphasise the need for more research on control, autonomy and empowerment in both home and community settings. We suggest this partly because evidence from the workplace appears to underline the importance of control, and partly because much of the rhetoric surrounding neighbourhood and community improvement initiatives give prominent place to the importance of different forms of empowerment.^{15 41}

As there is good evidence to suggest that control in the home environment has different (greater) health benefits for women than men (who conversely seem to benefit more from control at work), it is also important to explore differential effects of psychosocial factors.²³ As psychosocial factors have been posited as important causes of health inequalities⁷⁵, it is essential that more comparative research (comparing gender, education, income, ethnicity, age and other relevant variables) explore the social patterning of psychosocial factors and health, and the mechanisms that underlie those patterns.

Finally, many of the studies identified in our included reviews were small and /or used cross-sectional designs and were therefore unable to conclusively demonstrate associations or direction of causality. As non-causal relations cannot be expected to form the basis of effective public health interventions, causality needs to be explored further.⁶ Besides conducting large, longitudinal studies, evidence on causality can be obtained by evaluating the outcomes of interventions.⁷⁶ It goes without saying that future research should, if it is to significantly advance our understanding, be sufficiently robust. We recommend large, multi-site longitudinal studies, designed with control or comparison groups as appropriate.

Policy Implications

Health Inequalities

Health inequalities is a prominent and enduring concern of public health policy-makers^{11 77}. While overall life expectancy and health have tended to improve steadily in the developed world over the last 50 years, more advantaged social groups have experienced a faster improvement, which means that the gap between the top and bottom of the social scale has widened.

Exposure to socially patterned risk across the life course contribute to this inequality and attempts to improve population health have at times widened the gap – for example by benefiting the affluent and educated more than the poor and less educated.⁷⁷ Identifying which kinds of risk factors are differentially distributed across the social spectrum is a pre-requisite to the development of evidence based public health strategies that can be targeted at disadvantaged subgroups.

In the results of this meta-review, we have reported evidence of negative psychosocial factors that are particularly likely to have adverse health effects on people who belong to social groups that may also be disempowered or disadvantaged in other ways: such as ethnic minority groups, inner-city communities and women with low educational status (see Table 3).

Conversely, participants from more socially empowered groups may be in a better position to capitalise on the positive psychosocial characteristics of their communities. For example, it was generally the children of white mothers who appeared to benefit (in terms of higher birth weight) from being part of a community perceived to be high in social support (compared to mothers from ethnic minorities who also lived in supportive communities).⁴²

Some studies found little evidence of differential effects, whilst findings on gender differentials did not fit simply into an ‘advantaged vs. disadvantaged’ interpretation. Women caregivers may be more susceptible than male caregivers to experiencing mental ill health associated with high demands⁵⁰, but older men’s health has been found to have been negatively affected by instrumental support⁴⁰, and men may be more adversely affected by psychosocial factors linked to acculturation to western society compared to women⁴⁵.

Put simply, although the following rule of thumb does not extend to gender differentials, this review has found some evidence that psychosocial factors in home and community settings can make a bad situation worse for individuals who are disadvantaged in other ways, or a good situation better for advantaged individuals.

Policy Recommendations

To combat social inequalities in health (by leveling up, rather than down) social policies need to focus on risk factors that disproportionately harm disadvantaged groups. We have identified evidence of psychosocial risk factors that combine with and magnify the adverse effects of other forms of social disadvantage. Policy strategies that focus on reducing these risk factors could, we suggest, help narrow the health gap.

In terms of peoples’ health and health behaviours, the negative effects of educational and social disadvantage was found to be worsened by exposure to community violence (for both witnesses and victims) and by crime in the community.^{42 49} Hence, the targeting of resources to address community violence, anti-social behaviour and crime is recommended – they are doubtless desirable from a law and order perspective, but they should also be seen as strategies for tackling health inequalities.

People’s educational status and individual sense of control appeared to offer some protection from psychosocial environments that were generally associated with ill health and unhealthy behaviours.⁴² With this in mind, educational interventions are recommended to improve people’s access to information, ability to make healthy choices and to encourage more health promoting social norms. Again, improvements of this kind may already be advocated as public goods in their own right. Their potential for helping to achieve public health goals should provide justification for further resourcing in these areas.

This meta-review has also found evidence of risk factors that are relevant to policies aimed at raising general population health. Social isolation at home and in the community appears to adversely affect the health of people regardless of social background. Interventions that tackle this issue are recommended as a means of improving health and quality of life across the social spectrum. It should be noted that public health strategies that achieve aggregate improvements in population health may conflict with the goal of narrowing health inequalities, if they particularly benefit the better off. Policy-makers must at times judge which goal (aggregate health gains or reducing inequalities) should be prioritised and allocate resources accordingly.⁷⁷

Finally, as the psychosocial environment is contingent upon people's relationships with one another (e.g. social support), and their willingness to be involved in different aspects of home and community life (e.g. participation, social cohesion), it has been argued that responsibility for psychosocial improvements should extend beyond policy circles to the general population: i.e. we should 'all become agents of change'.⁸ This argument is cogent, but leads to the question of how policy-makers might assist and resource initiatives to bring about such popular action.

This review has not sought to identify or evaluate such initiatives, but it has identified psychosocial factors that may be encouraged to improve people's health and well-being. Financial, legal, educational, technical and human resources are available to promote more cohesive and supportive, and less anti-social, communities. Participation within the community has been shown by some studies to have a protective effect on health. This suggests an obvious rationale for engaging with communities in attempts to develop strategies that will benefit people's health and quality of life – such engagement could have the double benefit of helping ensure that changes are tailored appropriately to community needs, whilst benefiting the health and wellbeing of those who take part in the process. A recently published review of community engagement in initiatives addressing the wider social determinants of health has found that for some groups there are a range of clear and identifiable benefits of community engagement but there are no generalisable 'blueprints' for engineering community improvements that might benefit health.⁷⁸ Improvements must fit local contexts.

Conclusion

This meta-review was intended to describe the evidence base connecting psychosocial factors to population health in home and community settings. It informs readers about the kinds of evidence that is available, where the evidence is thin, and in which directions psychosocial theory might be developed in future. It has reported on evidence of psychosocial factors contributing to health inequalities linked to multiple disadvantage, and psychosocial factors associated with health across populations.

It is time for researchers and policy-makers to make a more concerted effort to understand the complexed relationships between psychosocial environments and health for different social groups in the community. Researchers and policy-makers also need to explore (and evaluate) how those environments might be modified to improve health and reduce health inequalities. Finally an effort is required to compare the potential benefits of modifying psychosocial environments with the effects of other forms of social and environmental change – including economic strategies and improvements to the physical environment. In this way psychosocial epidemiology can find its place within more general epidemiology, and policy-makers will have a better understanding of which kind of strategies will yield the greatest benefits to the health and wellbeing of the people they serve.

Table 1: Quality, Psychosocial Variables, Participants and Settings of the included reviews

First Author	Kuper ²⁵	Eriksen ²⁶	Garssen ²⁷	Alloway ²⁸	Robertson et al ²⁹	Atkinson ³⁰	Freisthler ³¹	Fratiglioni ³²	Depp ³³	Smith ³⁴	Manzoli ³⁵
Is there a well defined question?	++	++	++	+	++	++	++	++	+	++	++
Is there a defined search strategy?	++	+	++		+	++	++	+	+	++	++
Are inclusion / exclusion criteria stated?	++	+	+		++	++	++	+	+	++	++
Are study designs and number of studies clearly stated?	++	+	++	+	+	+	+	++	+	+	+
Have the primary studies been quality assessed?	++		+	+	+			+	+	+	++
Have the studies been appropriately synthesised?	++		+	+	+	+			+	+	++
Has more than one author been involved at each stage of the review process?											+
Psychosocial risk factors	Social support, social networks										
Psychosocial environment	Community and home								Community		Home
Health Measures	Coronary heart disease		Cancer	Depression	Postpartum depression	Parent child attachment	Child maltreatment	Dementia	Physical and mental health and wellbeing and health behaviours		Mortality
Participants	Adults, patients	Adults, immigrants	Adults, patients	Adults, students, parents	Mothers	Mothers and children	Parents	Elderly		Adults	Elderly

Quality Appraisal Key: ++ yes; + partial; blank cell = no

Table 1 continued

First Author	Kawachi et al ³⁶	Elliot ³⁷	Anderson ³⁸	Bernhardt ³⁹	Stuck ⁴⁰	Laverack ⁴¹	Sellstrom ⁴²	Rajaratnam ⁴³	Sampson ⁴⁴	Steffen et al ⁴⁵
Is there a well defined question?	++	++	++	++	++	++	++	++	++	++
Is there a defined search strategy?		+	+	+	++	++	+	+		++
Are inclusion / exclusion criteria stated?	+			++	++		++	++	++	++
Are study designs and number of studies clearly stated?	++	++	+	++	++		++	+	+	+
Have the primary studies been quality assessed?		++		+	++		++	+		+
Have the studies been appropriately synthesised?	+	+		++	+		++			+
Has more than one author been involved at each stage of the review process?		+			++					++
Psychosocial risk factors	Social capital Social power and social support		Social support, participation					Social cohesion, collective efficacy re-anti-social behaviour		Acculturation to western society
Psychosocial environment	Community	Community and home			Community					
Health Measures	Physical and mental health	Coronary heart disease		Dementia	Physical, mental health, mortality	Health behaviour	Birth weight, injury and maltreatment, conduct disorder.			High blood pressure
Participants	Adults, adolescents	Women	Adults	Elderly		Adults	Infants, children, adolescents			Adults, immigrants, ethnic minorities

Quality Appraisal Key: ++ yes; + partial; blank cell = no

Table 1 continued

First Author	Willaims ⁴⁶	Ingoldsby ⁴⁷	Veneema ⁴⁸	Wilson ⁴⁹	Yee ⁵⁰	Smith ⁵¹	Hackney ⁵²	Mahoney ⁵³	Foxcroft ⁵⁴	Tsuchiya ⁵⁵
Is there a well defined question?	++	++	++	++	++	++	++	++	++	++
Is there a defined search strategy?	+		+	++	++	++	++	++	++	++
Are inclusion / exclusion criteria stated?	++	++	+	++	+	+	++	+	+	++
Are study designs and number of studies clearly stated?	+	+	+	+	+	++	+	++	+	+
Have the primary studies been quality assessed?						+				+
Have the studies been appropriately synthesised?	++		+	+		++	++	+	+	+
Has more than one author been involved at each stage of the review process?						+				
Psychosocial risk factors	Discrimination	Exposure to community violence or anti-social behaviour.			Social support, demands	Religiosity and participation			Family structure, support and relationships	
Psychosocial environment	Community					Home and community				Home
Health Measures	Mental health, health behaviours	Conduct disorder, mental health, intellectual development			Mental health	Mental health	Conduct disorder, mental health, intellectual development		Alcohol	Bi-polar disorder
Participants	Ethnic minorities	Adolescents			Adults	Adults, children, adolescents			Adolescents	Adults

Key: ++ yes; + partial; blank cell = no

Table 2: Summary of Psychosocial Reviews With Quality Appraisal Score >4

Review First Author	Main Settings and Participants	Number* and Size (Smallest and Largest Sample Size) of Included Studies.	Findings on Associations Between Psychosocial Factors and Health
Kuper (2002) ²⁵	Community and home settings. Adults table – patients?. North America, Europe.	No. of studies = 30 (9 etiological, 21 longitudinal prognostic studies) Sample range: n=98, n=32624	Some evidence of association: <ul style="list-style-type: none"> • Social support/networks and reduced risk of coronary heart disease
Garssen (2004) ²⁷	Community and home settings. Adults, patients. North America.	No. of studies = 16 (all longitudinal). Sample range: Not stated	Some evidence of association: <ul style="list-style-type: none"> • Social support and reduced risk of cancer (particularly breast cancer)
Smith (1994) ³⁴	Community setting Adults. Countries studied not reported.	No. of studies = 67 (24 longitudinal). Sample range: n=11, n=3725.	Little or insufficient evidence of association <ul style="list-style-type: none"> • Social support and physical/mental health
Manzoli (2007) ³⁵	Home setting. Elderly people. Europe and North America.	No. of studies = 53 (all longitudinal studies). Sample range: n=206, n=93685.	Evidence of association <ul style="list-style-type: none"> • Marital status and lower mortality
Stuck (1999) ⁴⁰	Community settings. Elderly adults. North America, Europe	No. of studies 21 (all longitudinal) Sample range: n=91, n=6981	Some evidence of association: <ul style="list-style-type: none"> • Participation in local activities and reduced risk of functional status decline • Frequency of social contacts and reduced risk of functional status decline • Emotional support and reduced risk of functional status decline Evidence of harmful association or little association <ul style="list-style-type: none"> • Instrumental support and functional status decline
Bernhardt (2002) ³⁹	Community and home settings. Elderly adults. North America, Europe	No. of studies = 7 (4 longitudinal, 3 case control) Sample range: n=90, n=4615	Some evidence of association: <ul style="list-style-type: none"> • Participation and reduced risk of dementia • Social contacts and reduced risk of dementia
Sellström (2006) ⁴²	Community setting. Infants, children, adolescents. North America, Europe.	No. of studies = 7 (3 longitudinal). Sample range: n=400, n=101662.	Some evidence of association <ul style="list-style-type: none"> • Social support and higher birth weight • Reciprocity/participation and birth weight Evidence of harmful association <ul style="list-style-type: none"> • High crime rate and low birth weight
Hackney (2003) ⁵²	Home and community setting. Adults. North America	No. of studies = 35 Sample range not stated	Some evidence of association: <ul style="list-style-type: none"> • Religiosity and reduced risk of psychological distress Some evidence of harmful association: <ul style="list-style-type: none"> • Religious participation and psychological distress
Smith (2003) ⁵¹	Community setting. Adults (particularly students). North America (some from Europe and other continents).	No. of studies = 147 (15 longitudinal). Sample range: n=17, n=12007.	Evidence of beneficial and harmful associations <ul style="list-style-type: none"> • Religiousness and depression
Tsuchiya (2003) ⁵⁵	Home setting. Adults, offspring North America (some studies Europe)	No. of studies = 11 Sample range: n=19, n=5877	Some evidence of harmful association: <ul style="list-style-type: none"> • Dysfunctional family relationships and bi-polar disorder • Living alone and bi-polar disorder
Steffen (2006) ⁴⁵	Community settings. Adults, immigrants, ethnic groups. Africa, North America, South America, Europe, Asia	No. of studies = 125 (8 longitudinal) Sample range: n=20, n=48817	Some evidence of harmful association: <ul style="list-style-type: none"> • Acculturation to western society and high blood pressure

*Number of studies relates to the number of studies in each review that investigate psychosocial factors and their associations with health in home or community settings, as defined in our inclusion criteria.

Table 3: Psychosocial Factors and Health Inequalities: Evidence from Systematic Reviews on the Differential Health Effects of Psychosocial Risk Factors on Population Subgroups (Defined by Gender, Age, Ethnicity, Educational Status, Place and Space).

AUTHOR/DATE	Smith (1994) ³⁴	Sellström (2006) ⁴²	Stuck (1999) ⁴⁰	Manzoli (1994) ³⁵	Wilson (2003) ⁴⁹	Yee (2000) ⁵⁰	Sellström (2006) ⁴²	Steffen (2006) ⁴⁵	Smith (2003) ⁵¹
PSYCHOSOCIAL RISK FACTOR	Social support	Social support	Instrumental support	Marital status	Exposure to community violence	Demands (informal caregiving)	Exposure to high crime rate	Acculturation	Religiosity
HEALTH OUTCOME	General Health	High birth weight	Functional status decline	Mortality	Mental ill health	Mental ill health	Low birth weight	High blood pressure	Depression
GENDER	No significant difference		Negative association for elderly men	No significant difference	No significant difference	Stronger association for mothers		Stronger association for men	No significant difference
AGE					No significant difference			No significant difference	Stronger association for elderly (weak evidence)
ETHNICITY		Stronger association for white mothers			Stronger association amongst black participants				No significant difference
EDUCATIONAL STATUS							Stronger association for less educated women		
GEOGRAPHICAL REGION OR COUNTRY				Slight variance between northern and southern continents	No significant difference				
INNER-CITY, SUBURBAN OR RURAL					Stronger association amongst inner-city participants				

Note: blank cells refer to absences of evidence on differential outcomes; shaded cells refer to evidence of differential outcomes identified in this meta-review

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