towards reducing socioeconomic inequalities in type 2 diabetes in later life.

ASSOCIATION OF OBJECTIVE AND PERCEIVED NEIGHBOURHOOD CHARACTERISTICS WITH POOR ORAL HEALTH IN OLDER AGE: RESULTS FROM A CROSS-SECTIONAL STUDY OF OLDER BRITISH MEN

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Background Socioeconomic inequalities in oral health are established. However, the influence of neighbourhood-level socioeconomic factors on the oral health of older people is not well-established. We investigated both objective and perceived neighbourhood characteristics and their associations with a range of oral health measures in older age.

Methods The British Regional Heart Study comprises a representative sample of men drawn from 24 general practices across Britain at 40–59 years in 1978–80. In 2010–12, the participants when aged 71–92 years had a follow-up a physical examination including a dental assessment (n=1622), and completed a questionnaire (n=2137). Oral health assessment included objective measures (tooth count and periodontal (gum) disease), and self-reported fair/poor oral health and dry mouth symptoms. Neighbourhood deprivation was based on the Index of Multiple Deprivation (IMD); a composite score of neighbourhood-level factors (income, employment, education, disability, crime, housing, living environment). Perceived neighbourhood characteristics included local area services, safety, environment, and a cumulative index of these characteristics. Multilevel and multivariate logistic regression models were used to obtain odds ratios according to quintiles of IMD and perceived neighbourhood characteristics.

Results The risk of periodontal disease and tooth loss increased from IMD quintile 1 (least deprived) to 5 (most deprived); age-adjusted odds ratios (OR) for quintile 5 were 3.25 (95% CI 2.05–5.17) and 3.58 (95% CI 2.38–5.39) respectively, compared to quintile 1. These associations were attenuated only slightly on adjustment for individual social class, smoking, depression, social interactions and history of cardiovascular disease or diabetes, and remained statistically significant. Age-adjusted odds of dry mouth was increased only in quintile 2 (OR=1.41, 95% CI 1.04–1.91) and quintile 5 (1.50, 95% CI 1.09–2.07) compared to quintile 1 and was not significant after adjustments for the remaining covariates. The odds of self-reported fair/poor oral health was greater only in quintile 5 (OR=1.73, 95% CI 1.28–2.35), and remained statistically significant after adjustment for covariates. For perceived neighbourhood characteristics, significant trends were observed across quintiles of local area services, safety and a cumulative index of neighbourhood characteristics, with greater levels of tooth loss, periodontal disease, fair/poor self-rated oral health and dry mouth from quintile 1 (best rated) to quintile 5 (worse rated).

Conclusion Markers of poor oral health in older age were associated with both objective and perceived neighbourhood-level socioeconomic factors. Wider socioeconomic determinants are potentially important influences on the oral health of older people. Prospective studies are needed to establish these associations.

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Physical activity interventions

LONG-TERM OBJECTIVE PHYSICAL ACTIVITY DATA FROM TWO PRIMARY CARE PEDOMETER-BASED RANDOMISED CONTROLLED TRIALS IN MIDDLE-AGED AND OLDER ADULTS– ARE THERE STILL POSITIVE TRIAL EFFECTS AT 3 AND 4 YEARS?

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Background The PACE-UP 3-armed primary care trial recruited 45–75 year olds into a 12 week pedometer-based intervention, with one postal intervention arm and one nurse support. The PACE-Lift 2-armed primary care trial recruited 60–75 year olds into a 12 week nurse-supported pedometer-based intervention. Both trials increased step-counts by around a tenth and time in moderate-to-vigorous physical activity (MVPA) in bouts by around a third at 12 months, with no difference between nurse and postal arms in PACE-UP. Long-term physical activity (PA) maintenance, particularly MVPA in bouts, is important for a wide range of health benefits, but few trials provide objective PA measures beyond 12 months. We followed up PACE-UP and PACE-Lift cohorts at 3 and 4 years respectively, to investigate whether intervention effects persisted.

Methods 3 year (PACE-UP) and 4 year (PACE-Lift) accelerometer outcomes were regressed on baseline accelerometry to estimate change in average daily step-counts and average weekly time in MVPA in ≥10 min bouts in the treatment groups compared to control groups. Imputation analyses were conducted to account for missing data effects.

Results PACE-UP 3 year follow-up rate was 67% (681/1023). Both intervention groups were still doing more steps/day than the control group: postal 627 (95% CI 198, 1056); nurse 670 (95% CI 237, 1102); nurse plus postal 648 (95% CI 272, 1024). The pattern was similar for total weekly MVPA in bouts: postal 28 (95% CI 7, 49); nurse 24 (95% CI 24 (3, 45); nurse plus postal 26 (95% CI 8, 44). PACE-Lift 4 year follow-up rate was 76% (225/298). In PACE-Lift the intervention versus control comparisons were 407 (95% CI −177, 992) for steps and 32 (95% CI 5, 60) for MVPA in bouts; though the steps comparison is not statistically significant, both the steps and MVPA estimates are consistent with the PACE-UP findings. Both trials showed no wear-time differences between groups and imputation analyses did not change results interpretation.

Conclusion Over two thirds of both trial cohorts provided long-term data. Both trials showed persistent effects on time in MVPA in bouts at 3 or 4 years. PACE-UP showed a

significant persistent effect on step-counts and no difference between nurse and postal group outcomes. In PACE-Lift the step-count effect, while not statistically significant was consistent with both the PACE-UP findings and with the persistent significant effect for MVPA in bouts in PACE-Lift. These findings suggest that primary care pedometer interventions, delivered by post or with minimal contact, can make an important long-term contribution to addressing the public health physical inactivity challenge.

OP82 SYSTEMATIC REVIEW OF DIGITAL INTERVENTIONS TO IMPROVE THE DIET AND PHYSICAL ACTIVITY BEHAVIOURS OF ADOLESCENTS

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Background Adolescents have poor diets and insufficient physical activity (PA) levels, which can lead to non-communicable diseases in later life. Adolescence is a key stage for establishment of lifelong health behaviours. Digital platforms offer inexpensive means of delivering health interventions to large numbers of adolescents, but little is known about their effectiveness in supporting sustained changes. This systematic review was conducted to synthesise evidence on the effectiveness of digital interventions to improve diet quality and increase PA in adolescents, to identify effective intervention components and to assess the cost-effectiveness of these interventions.

Methods A systematic review of digital interventions to improve the diet and/or physical activity behaviours of adolescents was carried out according to established guidance. A search of MEDLINE, PsycINFO, CINAHL, PubMed Central, Embase, ERIC, the NHS EED and CENTRAL was conducted using a combination of MeSH and free text terms. Abstracts were assessed by two independent researchers against review inclusion criteria (intervention studies with and without a control group, participants aged 10–19, interventions that included a digital component, studies that measured a diet or PA outcome at baseline and follow-up, any setting and any population of adolescents). For included studies, data extraction and quality assessment were performed using a form designed to capture key information to answer the research questions. We then analysed data to identify key intervention features that were associated with significant improvements in behaviour. We also aimed to collect data on cost-effectiveness of included interventions.

Results The search returned 6792 results, of which 86 full texts were selected for screening. After assessing these against eligibility criteria, 27 intervention studies were included in the review. Most (n=15) were website interventions. Other delivery methods were text messages (n=4), gamified interventions (n=3), multi-component interventions that included a digital element (n=3), email (n=1), and social media (n=1). Significant behaviour change was often seen when interventions included diet and physical activity education, goal-setting in conjunction with self-monitoring, and parental involvement.

None of the included publications reported cost-effectiveness. Due to heterogeneity of studies, meta-analysis was not feasible.

Conclusion It is possible to effect significant health behaviour change in adolescents through targeted digital interventions that incorporate education, goal-setting, self-monitoring and parental involvement. Most of the evidence relates to websites and further research is needed to assess effectiveness of interventions delivered via alternate media such as smartphone apps. Longer term outcomes should be evaluated. Future trials of digital interventions need to evaluate cost-effectiveness.

OP83 DIET AND PHYSICAL ACTIVITY-BASED WEIGHT MANAGEMENT PROGRAMMES FOR ADULTS: RE-ANALYSIS OF A SYSTEMATIC REVIEW THROUGH THE LENS OF USER VIEWS TO IDENTIFY PATHWAYS TO EFFECTIVENESS

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Background Previous systematic reviews of weight management programmes have not been able to account for heterogeneity of effectiveness within programmes using top-down behavioural change taxonomies and standard meta-regression methods. This could be due to the complex nature of these interventions, the intersecting aspects of different intervention components, and the presence of overlapping causal pathways to effectiveness (or lack of effectiveness). Qualitative comparative analysis is a method that, when used in the synthesis of complex interventions, can help identify the 'how' and 'why' of intervention effectiveness while accounting for these overlapping and intersecting causal pathways.

Methods We updated a previous systematic review of studies relating to the views of programme users and trials of weight management programmes in adults that included dietary and physical activity components. We thematically analysed views studies to identify intervention features perceived to be important by service users and providers. We selected the most and least effective trials as measured by amount of weight loss at 12 months compared to minimal treatment. Using intervention components suggested by the synthesis of user views, we labelled interventions as to the absence or presence of these components and, using qualitative comparative analysis, we identified combinations of components that created the conditions sufficient for interventions to be most effective and least effective.

Results Our analysis included 21 studies of user views reported in 26 papers, and 20 interventions—10 most effective and 10 least effective—reported in 15 trials. The synthesis of user views suggested three facets of interventions for analysis: provider-user alliance, or the quality of the relationship between users and providers; provider directiveness, or the perceived high need for guidance from providers; and group relationships, or the quality of the relationship between peers in weight management programmes. Across our analyses, we found that pathways to intervention effectiveness were characterised by the presence of opportunities to develop supportive relationships with providers or peers, clear direction from