A systematic review of the effectiveness of interventions to improve the physical health of people with severe mental health problems

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Introduction

Efforts to remedy health inequalities by improving access to healthcare for those with mental health problems are relatively scant. However, a series of projects and recommendations have been introduced to identify and tackle the physical health needs of these groups with appropriate annual health checks and specialist health screening services (Seymour 2003; Cohen & Phelan 2001). Government policy has endorsed many of these initiatives, for example, in the English and Welsh National Service Frameworks for Mental Health (DH 1999; Welsh Assembly Government 2002) and in the new General Medical Services Contract (nGMS) (2003).

Evidence showing the effectiveness of interventions in meeting the physical health needs of people with mental health problems is relatively scarce, particularly in primary care settings. Examples of good practice may, however, exist but not widely publicised. Evaluation of their effectiveness may too be very limited.

Aims

The proposed review aimed to:

a) systematically search for published or unpublished literature to identify interventions to improve the physical health problems of people with severe mental health problems and any evaluations that have been carried out to show their effectiveness;
b) identify examples of good practice that have been evaluated.

Scope

The review will include any interventions, primarily in primary care settings, targeted at people with severe mental health problems such as:

- Monitoring physical health through annual check ups;

- Specialist screening/tests for physical health problems;
- Health promotion interventions, particular those relating to smoking cessation, advice on dietary intake and exercise;
- Reported examples of good practice or solutions to meeting the physical health needs of this group. Examples found in primary or secondary care or in the voluntary sector shown to be effective will also be included. Similarly, any international examples identified that are directly applicable to the UK will be utilized.

Method

Literature search

A literature search was conducted using the following bibliographic databases for the years 1966 to 2005: Medline and PubMed, PsychINFO, CINAHL, Applied Social Sciences Index, Embase, Evidence Based Reviews including Cochrane and DARE. We also searched for grey literature using the following websites: NIMHE, NICE, National Electronic Library for Health, National Research Register, British National Bibliography for reports, Google and Google Scholar. Manual searches of key medical and psychiatric journals were also conducted which included the British Medical Journal, British Journal of General Practice and the British Journal of Psychiatry. We also cross-referenced relevant articles and talked to some key experts to identify other papers and reports.

Search strategies were performed using variations of the following key terms: MENTAL HEALTH/ILLNESS; SCHIZOPHRENIA; PSYCHOSIS; DEPRESSION; PSYCHIATRIC; PHYSICAL HEALTH; IMPROVING; MONITORING; HEALTH CHECKS; INTERVENTIONS; PRIMARY and SECONDARY CARE SERVICES; DIETARY; EXERCISE; TOBACCO USE; SMOKING CESSATION; and PROGRAMMES. Papers were selected where they directly or indirectly addressed the primary question: What interventions are available to improve the physical health of people with severe mental health problems and how effective are they? Papers not directly dealing with this question were excluded from this review. We included all levels of evidence from randomized trials to case series evaluations.

Results

A total of 12 papers were selected for this review and are summarized in Table 1.

Table 1 Interventions aimed at improving the physical health and lifestyles of people with a SMI

Authors	Population & method of evaluation	Setting & type of intervention	Effectiveness of intervention
Bradshaw et al (2005)	People with schizophrenia Systematic review All types of study designs included	Studies from the UK & the US Four types of healthy living interventions: smoking cessation; weight management; exercise & nutritional education	Promising outcomes were found for smoking cessations, weight management and exercise programmes. However, the quality of the studies overall was poor
Chou et al (2004)	People with schizophrenia Longitudinal study, participants were randomised	Day care ward in a psychiatric hospital Nicotine patch therapy for 8 weeks	8 week post treatment abstinence of 26.9%. At 3 months 26.9%. Continous abstinence was 23.1% at 3 months
Druss et al (2001)	People with a SMI Randomised trial with assessments at baseline and follow-ups at 6- and 12-months	Conneticut, US. Veteran Affairs Mental Health Clinic A team of primary care practitioners: a family practitioner, medical nurse practitioner, providing basic medical care, patient education and liaison with mental health care staff	Patients receiving the intervention were more likely to: - make a primary care visit - receive almost all preventive measures listed in clinical practice guidelines - have improved physical health
el-Guebaly et al '(2002)	People with schizophrenia, depression & addictive disorders Critical review All types of study designs included	Smoking cessation approaches - combinations of medication, educational & cognitive behavioural approaches	For people with schizophrenia post-treatment quit rates were between 35% to 56%. At 6 months 12%. For people with depression post-treatment quit rates were between 31% to 72%. At 12 months 12% to 46%

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Authors	Population & method of evaluation	Setting & type of intervention	Effectiveness of intervention
Faulkner et al (2003)	People with schizophrenia Systematic review Experimental, quasi experimental & pre-experimental evaluation designs	Studies written in English from around the world Weight management interventions both pharmacological & behavioural/dietary	Weight loss is difficult but not impossible. Pharmacological interventions are *not* recommended for widespread use. Both diet & exercise counselling is necessary for sustained weight management
Giswold et al (2005)	Adults with any psychiatric diagnosis Ongoing randomised control trial	New York, US. Psychiatric Emergency Program Care manager to assist with links to primary care, providing information, facilitate access to primary care, & patient education	Care management was effective in linking patients to primary care within 3 months of presenting to a psychiatric emergency clinic
McCreadie et al (2005)	People with schizophrenia Randomised controlled trial	Scotland Community sample of those living independently or in support accommodation Free fruit & vegetables for 6 months	Dietary intake was improved at 6 months, but this was not sustained once free fruit & vegetables were withdrawn
Ohlsen et al (2005)	SMI, between 18-65 years of age Receiving antipsychotic medication Before and after evaluation	North-east Lambeth, CMHT Nurse advisor to monitor & identify physical illness & address poor lifestyles (diet, physical exercise, etc)	Improvements in weight and diet, although the authors were unspecific about the amount of weight loss & dietary changes
Phelan et al (2004)	SMI, between 18-72 years of age Cross sectional comparative evaluation	West London, CMHTs Use of a tool designed to identify the physical health needs	The PHC led to better recording of physical illness and lifestyle needs that were then specifically addressed

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Authors	Population & method of evaluation	Setting & type of intervention	Effectiveness of intervention
Steinberg et al (2004)	People with schizophrenia or schizo-affective disorder Randomisation to one of 3 groups	US, mental health services Motivational interviewing (MI) & feedback, psycho educational counselling or advice only (control group) could motivate participants to seek smoking cessation treatment	Within 1-week post MI intervention 32% of participants sought smoking cessation treatment, compared to 11% & 0% for the other groups. At 1-month follow up 28% in the MI group had attended their first session of smoking cessation treatment compared to 9% & 0% for the others
Welthagen et al (2004)	Adults admitted to an acute inpatient ward Mostly people with schizophrenia Prospective descriptive study	West London, Acute inpatient wards Weekly 3-hour primary care visits to the wards. Individual consultations lasting 30 minutes	A high demand was found for the primary care service. A range of medical conditions were diagnosed and treated. Health promotion advice & education was provided. Guidance also given to ward staff on managing medical conditions for specific patients
Williams et al (2004)	People with schizophrenia Retrospective case series	New Jersey, US. Nicotine nasal spray & psychosocial treatment	The nicotine nasal spray appeared to be well tolerated, but did not suit everyone who participated. Five out of 12 people (42%) were abstinent for more than 90 days after treatment

Evaluated interventions to improve physical health

Studies from the US

Integrated medical care for patients with a SMI

Druss et al (2001) conducted a randomized trial to examine the effectiveness of an integrated model of medical care for patients with severe mental health problems. The study aimed to assess whether access to primary care services, quality of preventive care and health-related quality of life could be improved. The integrated medical care comprised of a medical nurse practitioner (full time); a family practitioner (FP) (part-time); a nurse case manager; and an admin assistant (half time). The FP supervised the nurse practitioner and acted as a liaison to physicians in the psychiatric and medical services. The registered nurse provided patient education and liaised with mental health care providers and case management services.

Patients in the study were recruited from Veterans Affairs (VA) mental health clinics. The medical care team was located close to mental health clinics. Referrals were prescreened by the family practitioner who was authorized to treat routine, but not urgent or complex medical problems. Following this initial screening patients were randomized to receive either integrated medical care or usual care (at a VA general medicine clinic). Data collected included service use, satisfaction with medical care (including access, provider characteristics, coordination, continuity of care and overall care), physical and mental health status (using the 36-Item Short-Form Health Survey, SF-36), and costs. Assessments were carried out at baseline and at 2 follow-ups, at 6- and 12-months. There were 211 patients referred for primary care medical services. Of these 181 were eligible for randomization. A final total of 120 patients consented to participate. Sixty-seven percent of participants completed both 6- and 12-month follow-up assessments. Interestingly, no women were randomised to integrated medical care group and only 1 was allocated to the usual care group. The mean age of participants was 45 years. The main findings for those receiving integrated medical care included significantly more primary care visits (91.5% vs. 72.1%, P=.006) and less likely to have an emergency department visit in the year after referral (11.9% vs. 26.2%) compared to those receiving usual care from the general medical clinics. Patients in the integrated medical care group were more likely to receive 15 of the 17 preventive measures according to clinical practice guidelines. Significantly fewer problems were reported for 6 of the 8 domains of satisfaction with medical care for the integrated medical care group. The most significant effect was on continuity of care where only 1.3% of those receiving integrated medical care reported a problem compared to 22.5% for those receiving general medical care. In terms of improvements to physical health at 12 month follow up patients in the integrated medical care group had a 4.7 point increase on the SF-36 compared to 0.3 point decline in score for the general medical care group. Costs of the integrated medical care service were significantly higher ($266 vs. $148 per visit) compared to the general medical care, although the authors attribute this to start up costs and the former group not having full case loads.

This study provides strong evidence in favour of an integrated primary care model, located close to and in liaison with mental health care services. This model was highly

effective in not only improving access to primary care services and the physical health of people with a SMI but also in delivering preventive measures. It shows that having a dedicated team of primary health care professionals, including adequate admin support can target effectively the physical health and prevention needs of this group. However, the service relies on those who are in regular contact with mental health services. The generalisability of this study, however, is limited to men with a SMI and older rather than younger people. It is unclear whether this primary care service would reach those who are 'hard to reach' and do not usually attend outpatient clinics or appointments at community mental health teams.

Connections to primary medical care

Giswold et al (2005) examined variables that affected access to primary care for people presenting with a psychiatric emergency. The main aim was to assess whether community-based care management resulted in higher rates of linkage to primary care. This study formed part of an ongoing randomised control trial to compare care management with usual care at a Comprehensive Psychiatric Emergency Program (CPEP). Care management comprised of information relating to primary medical care sites; facilitating access to primary care; patient education that occurs at primary care visits; index cards for primary care providers containing information on psychiatric hospital discharge diagnosis, pharmacotherapy and mental health treatment site; follow-up including home visits and mobile outreach; and assistance through peer connections to community mental health sites and social services. Usual care was services offered routinely through CPEP and included psychiatric assessment and management, targeted therapeutic approaches and links with community mental health services. Referral to primary care services was at the patients request or if a significant medical problem was identified in the emergency ward. 'Connection' to primary care was defined as a completed visit within 3 months of entry to the study.

The study found that 57% of the 101 patients who participated were successfully linked to primary care services within 3 months compared to 16% receiving usual care (OR 7.24, 95% CIs 2.7 to 18.9, $P<0.001$). Almost half of the study sample had medical comorbidities such as hypertension, diabetes, asthma, hyperlipidemia and arthritis. The mean age of the sample was 37 years. Fifty-four percent of patients with a medical comorbidity were linked to primary care within 3 months. Just over half the sample (55%) needed an inpatient admission following their psychiatric crisis, but only 27% were linked to primary care.

Despite being the preliminary findings of a randomised control trial the study lacked particular details about the design, making it difficult to judge the robustness of the findings. Although this study showed successful linkage to primary care for patients receiving care management there was no report of the care received for physical health problems or any improved outcomes. These factors will be reported at a later date.

Studies from England

Health assessments in primary care

Roberts et al (2000) reviewed whether offering routine or opportunistic health assessment in primary care to people with schizophrenia was effective in improving the mental and physical health. Following an extensive search of the literature found only 3 studies met their inclusion criteria. These were studies by Nazareth et al (1996), Burns et al (1998), and Kendrick et al (1995). At the time of conducting the review the authors conclude there was insufficient data to suggest that health assessments of people with schizophrenia are effective in improving their mental and physical health.

Since the publication of this review there has been an increase in the number of evaluations assessing the effectiveness of a range of service models to improve the physical health and access to primary care service for people with a SMI. These publications are reviewed below.

The Well-Being Support Programme

The Well-Being Support Programme was pilot initiative that began in February 2003 through a partnership with the pharmaceutical company Lilly, Inventive Solutions and 8 Mental Health Trusts across the UK. The programme was aimed at people with a SMI of working age to improve physical health and achieve a healthier lifestyle. Central to this programme are Registered Mental Health Nurses (RMNs) trained in detecting physical health problems and briefed to run this programme within community mental health teams (CMHTs).

As part of this programme Ohlsen et al (2005) developed a service in North-east Lambeth (South London) to monitor and identify physical health problems; maintain antipsychotic medication adherence whilst taking account of side effects such as weight and sexual dysfunction; encourage positive lifestyles; create links with other community caregiving and support agencies; strengthen links between primary and secondary care; and support, advise and educate carers. This particular service started with a Nurse Advisory (NA) setting up the service in an unfamiliar CMHT. Initial work involved meeting key people who would be integral to the day to day running of the programme, including any practitioners likely to provide clinical input, other services such as dietetics, diabetology, pharmacy, smoking cessation, pathology, and the local Primary Care Trust (PCT) to publicise the programme. However, the authors note negotiating a standardized ‘joint working arrangements’ with the PCT proved difficult given the large number of GPs in the catchment area and the wide range of preferred methods of referral from the programme. People enrolled onto the programme requiring ongoing monitoring by the GP or specialized services were accessible only by referral through the GP.

The role of the nurse advisor was only to identify physical health problems and not to treat these, but refer to an appropriate agency. Referrals to the nurse advisor were conducted verbally by the care co-ordinator, consultant psychiatrists and junior doctors. The intervention comprised of an initial baseline assessment and screening for blood pressure and pulse; weight, height to calculate body mass index; current medication and

medication history; demographic details, family history, medical and psychiatric history; dietary assessment; attitudes towards medication and weight gain; ratings of neuroleptic side effects; self esteem; and cigarette, alcohol and substance misuse. Patients were asked to keep a food diary. A follow-up appointment was arranged with the patient to discuss the test results and plan further therapeutic work (i.e. dietary advice and/or monitoring; weight management; and/or attendance at the exercise group - all held weekly). Referrals to smoking cessation clinics or specialist services could only be accessed via the GP. If physical health problems were detected or specialist services were required the GP was informed as soon as possible. The second consultation repeated all physical measurements. The food diary was discussed and dietary goals were planned. Blood investigations were carried out including urea and electrolytes, liver function test, glucose, cholesterol, full blood count etc. Patients were offered the choice, where relevant, the weight management, physical activity group or to continue individual consultations.

The evaluation used a before and after assessment of the intervention based on the first and second consultation. There were 134 patients who received an initial baseline assessment. Eighty-seven percent patients were overweight and 63% obese. Ten percent of patients had pre-existing non-insulin dependent diabetes mellitus and 2% were diagnosed during the programme. Thirty-seven percent of patients were hypertensive (BP>140/85). Twenty nine percent had abnormally high prolactin levels (>550 nmol/L for men and >650 nmol/L for women).

Noteable improvements after two consultations were found for weight where 54% of overweight patients had lost weight; dietary intake where 60% of patients with an ‘unhealthy’ diet at baseline was reduced to 25% at the second consultation. No mention was made of the uptake of physical activities, the outcomes of those with hypertension, diabetes or high prolactin levels, or the average time between the initial baseline assessment and the second consultation. There were no details concerning the amount of weight lost or what actual changes patients had made to improve their diet (i.e. whether they had increased their fruit and vegetable intake or reduced fizzy drink consumption etc).

The Well Being Programme appears complex. It involves a significant amount of liaison between numerous services ranging from pharmacy to smoking cessation services as well as primary care services. Conducting also the physical health screening assessments, planning of therapeutic work and ensuring follow ups make this intervention a heavy workload for one person.

Physical health check assessment tool

Phelan et al (2004) designed a short tool, the Physical Health Check (PHC), to be administered by mental health staff to assess the physical health needs of people with mental health problems. This tool was evaluated on patients from a community mental health team (CMHT) and comparisons were made with a neighbouring CMHT. The tool developed was designed to cover three main areas; lifestyle, current physical health and recent receipt of healthcare. In developing the PHC the authors took into account the

feasibility of use and acceptability to patients. It was thus designed to be short, simple and without the need for training, to encourage routine use. The tool also aimed to stimulate dialogue between the practitioner and service user, and result in an agreed action plan once needs had been identified.

Team members administered the PHC to an opportunistic sample of 60 patients over a 6 month period. All participants were on an enhanced level of CPA and prescribed at least one psychotropic drug. Just under half the sample (47%) reported a diagnosed physical illness, the most common being musculo-skeletal problems.

A comparison group of 45 patients, also on enhanced level of CPA, from a neighbouring CMHT was assessed through case notes to examine any routine collection of physical health information over the previous 12 months. Forty two percent of the comparison group was recorded as having a current physical illness. However, the authors report that this routine information on physical health and physical needs was inconsistent and tended to be reactive, patchy and unsystematic. There was little recording of any aspects of health promotion or health screening in these multidisciplinary case notes.

Overall, the PHC appears to be a useful tool to record systematically and address physical illness and lifestyle issues in a secondary care setting. However, the PHC does not include a physical examination or health checks to detect the risk of or undiagnosed physical health problems. It is not clear how physical health needs were addressed and whether patients were sent to their GP for treatment, or whether health promotion advice or health screening was provided and if so by whom.

Primary care service for psychiatric in-patients

Welthagen et al (2004) evaluated the feasibility, acceptability and activity of a new weekly primary care service for patients admitted to an acute inpatient ward in West London. The service comprised of a GP who provided a weekly 3-hour session for 67 patients in 3 acute adult inpatient wards, and a limited service to older people. Ward doctors, nurses and the patients themselves were able to refer to this service. An appointment diary was kept on the ward and notes from consultations with the GP were included in patients' case notes. Any medication changes were also recorded. Appointment times were initially 15 minutes, but this proved inadequate to deal with the level of complexity and the communication difficulties encountered and increased to 30 minutes. After a few months the demand for this service far exceeded capacity and ward doctors were asked to prioritise patients who were homeless, not registered with a GP, who had not seen one in for more than 6 months, or who had been an inpatient for more than 3 months.

This primary care service was evaluated over a 10 month period and data were collected for all the consultations that took place. These data included patients' demographic details, presenting complaints and medical diagnoses, outcomes and treatment. Any health promotion or health screening provided was also recorded. Semi-structured interviews were conducted with patients who had used the service over a 5 month period.

Thirty-six clinics were held, with 168 appointments made during the study and 123 (73.2%) were attended. Leave or discharge from hospital were the main reasons for non-attendance. Approximately 22% of patients admitted to the ward during the study had made appointments to see the GP (107 patients). Data were missing for 6 people thus 101 patients were included in the analyses. Eight four patients attended their appointments, 13 (15%) were age 65 years or more. There was no mention of ethnicity in this study. Two thirds of the patients seen had had a physical examination within the first week of their admission prior to their consultation with the GP. Blood tests were routinely collected by the attending psychiatric senior house officer. The majority of patients had urea and electrolytes assessed and a full blood count (80%); liver function tests (74%); thyroid function tests (69%); random glucose measurement (65%); and cholesterol screening (42%).

Patients presented with a broad range of acute and chronic physical health conditions during consultations. The most commonly diagnosed conditions related to endocrine, nutritional and metabolic diseases. New medication for a physical illness was prescribed in 66 consultations. Twenty patients needed referral to other specialist services following consultation with the ward GP. Almost all patients seen received some form of health promotion advice, the most common smoking cessation. Feedback and education of nurses and medical staff concerning specific patients with a physical illness was also provided by the ward GP. Of the 18 patients who were interviewed about the primary care service half stated they preferred to see the ward GP rather than their own GP.

This study indicates the scale of physical health needs for patients on an acute ward and the input required by a general practitioner to meet this need. The identified need for physical health care was high and clearly a GP providing a 3-hour weekly session was not enough to cover the huge demand for thisservice. The study was reasonably well evaluated and the service appeared to work well. It was encouraging to see that routine checks and blood tests by psychiatric ward staff identified some physical health problems and this combine with the primary care service appeared to detect and manage/treat these conditions well. This shows how well collaborative working with both primary and secondary care staff can be achieved to improve the physical health of people receiving acute inpatient care.

Evaluated interventions to promote healthy living

Bradshaw et al (2005) in a systematic review of studies from the UK and the US investigated the efficacy of health living interventions for adults with a diagnosis of schizophrenia or schizo-affective disorder. The authors included both published and grey literature. Sixteen studies, with a variety of study designs, were included on four types of lifestyle interventions: smoking cessation (n=7), weight management (n=5), exercise (n=3) and nutritional education (n=1). The studies included were by George et al (2002), Weiner et al (2001), Addington et al 1998, Evins et al (2001), Roll et al (1998), Ball et al (2001), Pelham & Campagna (1991), and Ziedonis and George (1997). The smoking cessation, weight management and exercise studies reported positive outcomes, though the authors point to the overall poor quality of the studies. However, the more

methodologically robust studies with promising outcomes were those evaluating smoking cessation, weight management and exercise interventions. In conclusion the authors highlighted the need for further research to develop effective interventions for this group to assist with maintaining healthier lifestyles. They also mention the potentially important role of nurses both in hospital and community settings in this area of development.

This review provides some insight into the recent development of effective interventions to improve lifestyles in this group. There have been more developments in smoking cessation, weight management and exercise programmes and fewer dietary interventions. However, there some additional studies not included in Bradshaw et al's (2005) review that will be outlined in the following sections.

Dietary improvement

McCreadie et al's (2005) study represents one of the few studies aiming to improve the diet of people with schizophrenia. In a randomised controlled trial McCreadie et al (2005) evaluated the impact of giving free fruit and vegetables for 6 months on dietary habits in people with schizophrenia. The sample was recruited from two areas in Scotland living in the community either independently or in supported accommodation. Participants were encouraged to carry out their own domestic chores, including shopping and cooking. Regular support was provided by input from care workers. Houses rather than people were randomised to receive either free fruit and vegetables for 6 months with associated instruction; free fruit and vegetables alone; or, to continue as usual. Detailed assessments were made of dietary intake through a questionnaire and by taking blood samples. The primary outcome measure was number of portions of fruit and vegetables consumed per week with a comparison of change from baseline to 12 months, although assessments were also carried out at 18 months. Secondary outcomes were plasma folate, vitamins C and E and carotenoids; cardiovascular risk factors and body mass index.

There were 186 people eligible to take part in the study and 102 consented. At baseline men with schizophrenia consumed significantly less green vegetables, root vegetables, raw vegetables, potatoes, pasta or rice, and pulses compared to the general population. Women with schizophrenia consumed less potatoes, rice or pasta compared to the general population. The recommended number of portions of fruit and vegetables is 5 per day. At 6 months the mean number (SD) of portions of fruit and vegetables consumed per week increased from 16 (14) to 30 (19) for the free fruit and vegetable with instruction group; 14 (12) to 31 (24) for the free fruit and vegetables alone group; and, 19 (17) to 18 (15) for the treatment as usual group. At 12 and 18 months the mean number of portions consumed gradually declined but still remained higher than at baseline. There were no changes detected in plasma micronutrients or body mass index. The authors discussed their findings in the wider context including issues of unemployment and low income, and that the intervention was an 'add on' rather than a displacement of unhealthy food.

This was an interesting study that was relatively robust. There were some methodological issues about the accurate measurement of dietary intake and that nearly half of the people approached to take part in the study refused. It showed, however, an increase in the

consumption of fruit and vegetables when provided free. However, these increases were not sustained over time once the intervention was withdrawn.

Weight management interventions

Faulkner et al (2003) conducted a systematic review to evaluate the effectiveness of weight management inventions designed to control weight gain in people with schizophrenia. Studies included used either experimental, quasi experimental or pre-experimental designs. Extensive attempts were to identify published and unpublished literature. Sixteen studies were included with participants ranging from inpatient or long stay residential and outpatients settings. Most studies were short-term interventions. Eight studies evaluated pharmacological interventions to manage weight. The other eight studies evaluated combinations of behavioural and dietary interventions.

The overall results from Faulkner et al's (2003) review suggest some small reductions in weight can be gained through pharmacological, behavioural and dietary interventions. The small effects are due to the short-term nature of the inventions. Only one study suggested that weight could be controlled long-term (Aquila et al 2000). Only 3 three studies showed a decrease in body weight of 5% (Umbricht et al 2001; Goodall et al 1988; Upper et al 1971). Despite the use of stronger research designs the efficacy of pharmacological interventions was mixed. However, the authors consider pharmacotherapy for weight management to be used as a last resort. The studies using behavioural/dietary interventions were weaker in design. Small reductions in weight were found with interventions combining exercise and/or dietary counseling within a behavioural change context (Ball et al 2001; Umbricht et al 2001; Aquila et al 2000).

This systematic review provided some important recommendations based on evaluations of the efficacy of pharmacotherapeutic and behavioural, dietary and exercise interventions. The former intervention should be used only as a last resort and for people who are obese. Although the latter interventions show only small reductions in weight they are preferable in terms of sustained weight loss over time. This is an important consideration given weight management may be a life long endeavour, particularly for people who are obese.

Smoking cessation interventions

Bupropion and nicotine replacement therapy (NRT) have shown modest success in people with schizophrenia and those with depression, particularly when combined with some form of behavioural or group therapy. There are five types of NRTs that can be administered in various ways: nicotine polacrilex (gum), nicotine transdermal patch, nicotine inhaler, nicotine nasal spray and nicotine lozenge. Bupropion has also been shown to be effective in people with schizophrenia and those with major depression (Weiner et al 2001; Hayford et al 1999).

In a critical review of smoking cessation approaches for people with mental health problems or addictive disorders el-Guebaly et al (2002) reported on 24 empirical studies that had been conducted between 1991-2001. Sixteen of the included studies concerned people with a diagnosis of schizophrenia and those with depression. For the purposes of this review we will not report on studies referring to those with addictive disorders. The

main aim of el-Guebaly et al's (2002) review was to assess the impact of smoking cessation approaches in these groups.

Most of the interventions examined used a combination of medication, educational and cognitive-behavioural approaches. Studies involving people with schizophrenia were mostly small clinical samples. The time intervals for assessment varied from two days to 16 months. The post treatment quit rates ranged from 35% to 56%. At 6 months the quit rate was 12%. Quit rates for people taking atypical antipsychotics was 16.7% compared to 7.4% for those taking conventional antipsychotics (George et al 1995). Clozapine appears to reduce the desire to smoke in people with schizophrenia. Quit rates for people with depression ranged from 31% to 72% at the end of treatment. At 12 months the quit rates were between 12% to 46%. The most effective smoking cessation approach for people with major depression appeared to be a combination of cognitive behavioural therapy with standard smoking cessation strategies.

The studies examined in this review varied in populations, treatments and time intervals between the smoking cessation intervention and outcome assessment. In general, quit rates in people with mental health problems are often lower to that of the general population, however, reasons for quitting (i.e. concerns about health etc) tend to be similar (Addington et al 1997).

More recently Chou et al (2004) conducted a longitudinal study to evaluate the effectiveness of nicotine patch therapy in people with schizophrenia. A total of 68 people took part in the study, 26 of whom were randomised to the nicotine patch group. A series of assessments were carried out at baseline, at 8 weeks post treatment and at 3 month follow up. Data were collected on mental health status, nicotine dependence, and CO levels (expired breath carbon monoxide). Chou et al (2004) found significant reductions in nicotine dependence, the number of cigarettes smoked per day, and CO levels. At the 8 week post treatment phase point-prevalence rates of abstinence from smoking was 26.9% and 26.9% at 3 months in the nicotine patch group. The rate of continuous smoking abstinence was 23.1% in the nicotine patch group.

In a small retrospective case series study Williams et al (2004) examined the use of nicotine nasal spray in people with schizophrenia. Twelve smokers with schizophrenia or schizoaffective disorder were treated with nicotine nasal spray. Each participant received monthly individual psychosocial treatment for tobacco dependence and 8 attended group treatment for smokers with mental health problems. Five participants (42%) were abstinent for 90 days. Four of seven people who did not quit had substantial reductions in the number of cigarettes smoked per day. The use of nicotine nasal spray appeared to be well tolerated in this group. However, there is a risk of dependence compared to other forms of nicotine replacement (West et al 2000). The spray was not effective for everyone in this study.

Motivation to stop smoking

One of the most important predictors of quitting smoking is readiness to change. Few studies have addressed the issue that smokers in mental health and addiction treatment settings have lower motivation to quit (Ziedonis & Williams 2003). One study has

developed the Change Assessment Scale to assess motivation levels in smokers with a SMI (Acton et al 1996). Steinberg et al (2004) carried out a study to assess whether motivational interviewing is effective in motivating smokers with schizophrenia or schizoaffective disorder to seek smoking cessation treatment. Seventy-eight people were randomly allocated to receive a 1-session motivational interviewing (MI) intervention, standard psycho-education counselling, or advice only. Personalised feedback was given to participants in the MI group which comprised of graphical representations of their responses for level of nicotine dependence and CO levels compared to nonsmokers, and consequences of smoking, money spent on cigarettes, the importance of quitting smoking, and confidence in ability to quit (without comparisons). The intervention lasted approximately 40 minutes. Data collection included demographic information, type of antipsychotic medication, Global Assessment of Functioning, substance abuse history, and confirmation of psychiatric diagnosis. Also CO levels, dependence on nicotine and four measures of motivation to quit were measured. These latter measures were not administered to the advice only group as the assessment would increase motivation. All assessments were carried out at 1-week and 1-month interviews following the intervention. Within one week 32% of people in the MI group contacted a smoking cessation service, compared to 11% for the psycho-education counselling group, and 0% for recipients of advice only. At one month follow up 28% in the MI group attended their first session of smoking cessation counselling compared to 9% and 0% for the other two groups.

Steinberg et al's (2004) study is important in showing how smokers with a SMI can be motivated to seek smoking cessation treatment. The authors note that 75% of participants in the MI group were at the precontemplation stage of change and the smokers already seeking treatment for smoking were excluded from the study or had mentioned wishing to have immediate treatment. It would have been interesting to see the outcomes of those attending smoking cessation services, whether they completed the treatment and what their quit rates were.

Discussion

We found a growing interest in this area that has led to more studies evaluating the effectiveness of interventions to improve the physical health and lifestyle of people with a SMI. There are some encouraging findings from the range of interventions presented in this review to improve the physical health and lifestyles of people with a SMI. Druss et al's (2001) study represents the strongest evidence that locating a primary care team close to mental health services, with good liaison/links between primary care staff and mental health professionals is highly effective in improving the physical health of people with a SMI. Other studies presented above have also shown the importance and effectiveness of an 'integrated' approach whereby primary care and secondary mental health care services work together to improve the physical health of people with a SMI. Welthagen et al's (2004) study is another example of an integrated service where a GP visits an acute inpatient ward weekly to diagnose, monitor and treat physical health problems in inpatients, as well as provide health education and advice.

Many of the interventions included in this review show the benefits over a relatively short term period. The sustainability of these inventions is unclear and more practical work needs to be done to establish how people with a SMI continue to eat fruit and vegetables, see their GP for physical health complaints, improving GP practices in terms of identifying, monitoring and treatment medical problems in this group.

In promoting healthy lifestyles in people with a SMI studies have shown the important role of mental health services in both encouraging and providing interventions to enable this group to stop smoking and manage their weight effectively.

Conclusion

In answer to questions about who should be responsible for and who is best placed to meet the physical health needs of people with a SMI the evidence favours an approach where both primary and secondary mental health care services work in unison.

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