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MEN'S HEALTH

A health status of men in Denmark and a review of effective interventions for promoting men's health

- short version

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1 Background and purpose

The Centre for Health Promotion and Disease Prevention of Denmark's National Board of Health has launched a project on the early detection of risk factors for disease and of diseases among men in Denmark. The purpose of the project is to promote men's health both quantitatively and qualitatively by focusing on the early detection of risk factors for disease and of diseases among men. As part of this project, the Centre for Health Promotion and Disease Prevention asked Denmark's National Institute of Public Health to prepare a report with basic epidemiological data. The report is intended to identify which health promotion and disease prevention initiatives are needed and the indicators that can be used to monitor future initiatives.

The purpose of the report is to summarize the physical and mental health status of men in Denmark and selected determinants of health and risk factors for ill health and to identify sex differences where this is relevant. Thus, this report does not emphasize specifically focusing on sex differences. Another purpose of the report is to analyse whether selected sociodemographic factors (educational level and civil status) may contribute to explaining how men and women differ in their use of health services (hospital admission rate and use of general practitioner services) and differences in men's and women's health behaviour. The most important source of data is the 2005 Danish Interview Health Survey. Additional information has been obtained from several registries, including the Danish Registry of Causes of Death, Danish National Patient Registry, Danish Psychiatric Central Research Registry and Danish Public Health Insurance Registry.

The report uses a broad definition of health that does not merely emphasize the absence of disease or infirmity but also includes the quality of life.

The report is intended mainly for municipal and regional health planners, professionals and politicians in Denmark, who will determine the health promotion and disease prevention initiatives for the coming years based on the municipal health profiles.

2 Sociodemographic description of men in Denmark

On 1 January 2010, Denmark had 2.74 million male inhabitants, and 49.2% of the people 16 years and older were men. The largest age group is men 35–44 years old, and slightly more than half of all men are married and 16% are cohabiting.

The largest educational categories are men with 11–12 years and 13–14 years of combined school and vocational education, and slightly less than two thirds of men are in the labour force. Slightly less than half of men live in single-family detached houses and nearly one third in blocks of flats. One third of men have an annual disposable income (excluding interest expenses, taxes etc.) between DKK 100,000 and DKK 200,000 (€13,400 and €26,800) and one fifth less than DKK 100,000 (€13,400).

The population projection of Statistics Denmark for 2040 shows a significant increase in the age group 65 years and older, a slight increase in the youngest age groups and a decline in the age group 35–64 years. The number of males of all ages in Denmark is projected to increase to 2.96 million in 2040.

3 Life expectancy and mortality

Life expectancy indicates the average number of years a person at a given age is expected to live.

In Denmark, the life expectancy at birth was 76.5 years for men (and 80.8 years for women) in 2009. Denmark's life expectancy at birth was among the highest in the world in the 1950s and has stagnated since then. In 2008, Denmark ranked number 17 of 20 OECD countries in male life expectancy at birth (and number 19 of 20 for females).

In Denmark, the life expectancy is 61.5 years for a 15-year-old man, 24.2 years for a 55-year-old man and 2.5 years for a 95-year-old man. The life expectancy for 60-year-old men increased by 2.4 years from 1987 to 2005, and the healthy life expectancy (life expectancy without reduced functioning) increased by 3.3 years, so that men not only live longer but also have higher quality of life.

Men have higher mortality than women at all ages. The most frequent causes of death among men (and among women) are diseases of the circulatory system, cancer (neoplasms), diseases of the respiratory system, mental and behavioural disorders and diseases of the digestive system. Men have higher mortality than women at any given age for all causes of death. For example, men's mortality from cardiovascular and other circulatory diseases is 1.5 times that of women, the ratio for respiratory diseases is 1.4 and the ratios for suicide and accidents exceed 2.

The causes of death vary with age. Accidents are the most frequent cause of death among young men, followed by suicide and cancer. From 45 years of age, circulatory diseases and cancer are the most frequent causes of death, and from 75 years of age respiratory diseases become another frequent cause.

4 Use of health services

In 2009, men in Denmark had 579,000 admissions to somatic hospitals lasting 24 hours or longer, 3.34 million outpatient hospital consultations and 544,000 consultations in an emergency room. Women have a higher hospital admission rate and more outpatient consultations than men do, and men have more emergency-room consultations than women do.

The most frequent reasons for hospital admission in Denmark among men (and women) are circulatory diseases, cancer, injury and poisoning, digestive diseases and respiratory diseases. The differences in the causes of hospital admission between men and women are greatest for circulatory diseases and mental and behavioural disorders followed by diseases of the skin and subcutaneous tissue and certain infectious and parasitic diseases. The hospital admission rate generally increases with increasing age. The only substantial exceptions are the hospital admission rate for injury and poisoning, which is highest among people 16–24 years old and 65 years and older and the hospital admission rate for mental disorders, which is lowest among adults 25–34 years old and highest among people 45–54 years old.

In Denmark in 2008, 11,184 men 15 years and older were hospitalized for at least one day in a psychiatric hospital (541 per 100,000 men), 36,813 men had at least one outpatient consultation with a hospital department of psychiatry (1677 per 100,000 men) and 24,550 men attended a psychiatric emergency room. Men and women have the same admission rate at psychiatric hospitals, but women have more outpatient psychiatric hospital consultations than men do, and men have more psychiatric emergency-room consultations than women do.

The most frequent causes of admission to a psychiatric hospital among men are: schizophrenia, schizotypal and delusional disorders; mental and behavioural disorders due to psychoactive substance use; and mood (affective) disorders such as depression and mania. More than twice as many men as women were hospitalized for mental and behavioural disorders due to psychoactive substance use, and more men than women were hospitalized for: schizophrenia, schizotypal and delusional disorders; behavioural and emotional disorders with onset usually occurring in childhood and adolescence; and disorders of psychological development.

Among men, schizophrenia, schizotypal and delusional disorders are most frequent for those 25–34 and 35–44 years old, and mental and behavioural disorders due to psychoactive substance use are especially common for those 35–44 and 45–54 years old. Mood disorders are most frequent among men 45 years and older.

In 2009, men in Denmark had an average of 7.7 consultations per year with a general practitioner (women had 10.5). The average number rises steeply with increasing age. Men have fewer average consultations than women at all ages. Men had 3.0 (and women 3.2) consultations with specialist physicians on average in 2009. Men's use of specialist physician services varies little with age.

In 2009, males in Denmark received 4.47 million units of prescription pharmaceuticals. The most frequently used prescription pharmaceuticals for men are those for treating infectious diseases, circulatory diseases, diseases of the nervous system, diseases of the skin and subcutaneous tissue, respiratory diseases and musculoskeletal disorders. For all pharmaceutical product categories, more women than men receive pharmaceuticals, and the use of medicine increases with age.

5 Self-reported morbidity

The 2005 Danish Interview Health Survey uses three different indicators of self-reported morbidity in Denmark.

The first is the prevalence of long-term illness (6 months or longer, and also including the long-term effects of injury, disability and other long-term conditions): 37.8% of the men surveyed say that they have one or more long-term illnesses. The proportion of men with one or more very limiting long-term illness is 9.7%, and 28.1% have long-term illness that is slightly limiting in daily life or not at all. The most common self-reported long-term diseases among men are: musculoskeletal disorders; cardiovascular diseases; respiratory diseases; injuries; diseases of the nervous system, eye and adnexa and ear and mastoid process; and endocrine, nutritional and metabolic diseases. Men have a higher prevalence than women of cardiovascular diseases, injuries, cancer, genitourinary diseases and infectious diseases.

The second indicator is the prevalence of 19 specific diseases, in which the survey respondents were asked about each disease and indicated whether they have or have had the disease. The most frequent diseases among men were allergy (17.4%), arthritis or rheumatism (15.7%), back disorders (mostly lower-back pain) (15.4%), hypertension (13.2%) and tinnitus (11.8%).

The third indicator is the prevalence of several general symptoms, pain or complaints by asking respondents whether they have had one or more within the past 14 days and whether they were very bothered or only slightly bothered by them. The most bothersome types of general symptoms, pains or complaints among men were musculoskeletal pain, tiredness, difficulty in sleeping and headache.

Of the men surveyed, 11.1% reported having been limited in carrying out activities of daily living as a result of illness within the past 14 days, and 5.1% of men reported long-term limitations in activities. A total of 34.6% of men used medicine regularly, with 38.2% using prescription medicine and 28.2% over-the-counter medicine within the past 14 days. Painkillers and antihypertensive medicine are the most frequently reported types of medicine used within the past 14 days.

Morbidity generally increases with increasing age in Denmark and is lower among men than among women. Morbidity generally declines with increasing educational level. Married men have lower average morbidity than men who are cohabiting or single (unmarried and not cohabiting, separated, divorced or widowed).

6 Health-related quality of life

Based on the 2005 Danish Health Interview Survey, 81.4% of men in Denmark rate their health as being excellent or good, and only 4.8% rate their health as being poor or very poor. Similarly, 83.7% of men report that they feel well enough most of the time to do what they want to do. The proportions rating their health as being excellent or good and reporting that they feel well enough most of the time to do what they want to do decline with increasing age. Men rate their health-related quality of life more positively than women do.

A total of 7.6% of men (versus 9.8% of women) often feel stressed in daily life, especially men of normal working age.

Among men, 56.8% say they have good mental health (for example, have been happy and satisfied, have felt calm and relaxed, have not felt nervous and have not been so far down in the dumps that nothing could cheer them up), and 38.3% report feeling very vibrant (for example, in good form and full of life, full of energy, not feeling tired and not feeling burned out). Those who are 45–64 and 65–74 years old have especially good mental health and are very vibrant. More men than women say that they have good mental health and are very vibrant.

Having a functional set of teeth is another part of high health-related quality of life. A total of 83.4% of men have a functional set of teeth (defined in the Survey as 20 or more teeth), but this is strongly associated with age, applying to nearly all young people but only 25.3% of those 80 years and older.

The proportion of men with high health-related quality of life increases with increasing educational level, and the proportion is highest among married and cohabiting men.

7 Social relationships

Social relationships may be structural, the crucial factors being which people and how many each person has contact with, or they may be functional, the key factors being the types of support a person can obtain from his or her network.

To measure structural social relationships, the 2005 Danish Interview Health Survey asked respondents about contact with their family and with friends and acquaintances. Among men in Denmark, 11.9% never or seldom meet with family members, and 6.8% never or seldom meet with friends and acquaintances. Very old men have the largest proportion of those with poor contact with friends and acquaintances. Very few of the youngest respondents never or seldom meet with friends and acquaintances.

To measure functional relationships, the Survey asks the respondents whether they believe that they can rely on obtaining help from others in case of illness and whether the respondents are often alone even though they would prefer to be with other people. Among men, 5.7% do not believe that they can rely on obtaining help from others in case of illness, and the proportion increases with increasing age. Only 2.7% of men say that they often alone even though they would prefer to be with other people, and very young and very old men especially report this.

More than one third of men seldom or never participate in association or leisure activities together with other people.

Men and women differ little in their structural and functional social relationships. Educational level is not clearly associated with either structural or functional social relationships. Nevertheless, participation in association or leisure activities clearly increases with educational level.

The groups with the highest proportions of weak social relationships are single men who have never married and those who are separated or divorced. The smallest proportion of weak social relations is among married men.

8 Health behaviour and health habits

Health behaviour is part of lifestyles and includes the habits and activities that influence the health and well-being of individual people. People may carry out conscious activities to maintain or improve their health or to prevent disease, and they may also carry out more habitual activities without consciously thinking about how this might affect their health.

The National Board of Health conducted a self-report survey of smoking habits in Denmark in 2010 and found that 22% of men (and 21% of women) smoke daily and 5% of men (and 5% of women) at least once per week or more seldom. The 2005 Danish Interview Health Survey found a slightly higher prevalence of self-reported daily smoking: 31.6% of men (and 27.8% of women). The smoking habits of Denmark's population are monitored annually, and the proportion smoking is declining steadily, which explains some of this difference. Among men, 10.2% report being light smokers (0–14 cigarettes per day) and 18.8% heavy smokers (15 or more cigarettes per day), and 9.1% report smoking other tobacco products than cigarettes (pipe, cigarillos and cigars). Men 25–44 years old have the largest proportion of heavy smokers and men 45–64 years old the smallest. More men than women are heavy smokers or smoke other tobacco products than cigarettes, and more women than men are light smokers or nonsmokers.

A 2008 self-report survey of alcohol consumption in Denmark shows that more men (11.8%) than women (7.6%) report exceeding the maximum alcohol consumption recommended by the National Board of Health, and this is more frequent among young men than older men. Many more men than women said that they binge drink (defined here as five or more standard drinks at one time at least once weekly).

In the 2005 Danish Interview Health Survey, 15.0% of men and 29.5% of women reported not consuming any alcohol in the past year. Many more men (61.5%) than women (36.6%) binge drink (defined here as five or more standard drinks at one time at least once in the past month). The proportion of men who binge drink declines sharply with increasing age. More men (17.9%) than women (10.8%) reported exceeding the maximum alcohol consumption recommended by the National Board of Health. The lowest proportion of men exceeding the recommended maximum alcohol consumption is in the age group 25–44 years.

Among men, 32.9% report engaging in moderate to strenuous physical activity at leisure, and 13.0% report having solely sedentary leisure activity such as reading or watching television. More men (32.9%) than women (20.5%) report moderate to strenuous physical activity at leisure, but the proportions with solely sedentary leisure activity are similar among men and women. The proportion of men engaging in moderate to strenuous physical activity at leisure declines with increasing age, and the proportion with solely sedentary leisure activity increases with age. Among men in the labour market, 40.0% have sedentary work, especially those 25–44 and 45–64 years old.

Dietary habits are determined through a series of questions about how often respondents eat various types of food. Among men, 14.9% (with the lowest proportion among those 80 years and older) eat salad or other raw vegetables daily; 38.5% eat fruit daily (with the highest proportions among men 45–64 and 65–79 years old); 43.0% eat fish for dinner at least weekly (with the highest proportions among the oldest age groups); and 14.9% never eat butter on bread. Women's health habits are generally healthier than those of men.

The proportion of men who report being obese (body mass index (BMI) ≥30) increased from 5.6% in 1987 to 11.8% (versus 11.0% for women) in 2005. The proportion of men who report being overweight (BMI 25.0–29.9) was 40.9% (versus 26.4% for women) in 2005. Men's prevalence of obesity increases with increasing age until 80 years and then declines slightly.

Most people who report using psychoactive drugs are young. Among men 16–24 years old, 24.8% (versus 17.6% among women of the same age) reported using hashish within the past year and 8.4% (versus 3.0% among women of the same age) used other psychoactive drugs. These proportions were 8.5% for hashish and 3.8% for other psychoactive drugs among men 25–44 years old and much lower among men 45 years and older.

Most of men's health habits and risk factors are more inappropriate (less health-promoting) than those of women, including smoking, alcohol consumption, diet, BMI and use of psychoactive substances. Men's health behaviour is only healthier than that of women within moderate to strenuous physical activity at leisure.

Except for alcohol consumption, men's health behaviour has a clear social gradient, since the proportion with health-promoting behaviour increases with increasing educational level. The proportion of men who binge drink is lowest among people with less education, and the proportion of men exceeding the maximum alcohol consumption recommended by the National Board of Health is not associated with educational level.

Civil status and health behaviour and not clearly associated, but married men generally seem to have the most appropriate health behaviour.

9 Sex differences in a sociodemographic perspective

This chapter differs from the others by focusing more on methods and analysis. The purpose is to contribute to understanding the differences between men's and women's use of hospital services (hospital admission) and use of general practitioner services and the differences in men's and women's health behaviour and risk factors: solely sedentary leisure activities, obesity, heavy smoking and exceeding the maximum alcohol consumption recommended by the National Board of Health.

This new analysis investigated whether civil status (categorized as married or cohabiting versus single) and educational level (categorized as low, medium (3–4 years of higher education) and high (>4 years of higher education) or students in secondary school) can contribute to understanding sex differences.

The analysis of sex differences in hospital admission rates in Denmark is based on the Danish National Cohort Study and covers solely diseases that are not sex-specific. Previous illness is controlled for in several ways (hospital admission within the past 10 years; admission within the past 5 years; self-rated health; self-reported long-term illness; and general symptoms, pain or complaints within the past 14 days). The age groups analysed were 16–59 years and 60 years and older.

Among people 16–59 years old, men have a 27% higher hospital admission rate than women do regardless of previous illness. Civil status and educational level explain some of this sex difference. Further, the higher hospital admission rate among men versus women applies to married or cohabiting men and women, whereas single men have a lower hospital admission rate than single women. Lifestyles seem to explain some of the difference between single men and women but not between men and women who are married or cohabiting.

Further, among people with a high educational level, the hospital admission rate is higher among men than among women, but women have a higher hospital admission rate than men among people with a low or medium educational level.

Among people 60 years and older, men have a higher hospital admission rate than women do regardless of previous illness, sociodemographic indicators and lifestyle factors. Neither educational level nor civil status contributes to explaining these sex differences.

The analysis of the use of general practitioner services is also based on the Danish National Cohort Study and solely covers people 45 years and old, thus excluding sex-specific consultations, such as those related to pregnancy and birth. Men have 20% fewer consultations than women regardless of previous illness, sociodemographic indicators and lifestyle. Thus, neither educational level nor civil status contributes to explaining these sex differences.

Significantly more men than women smoke heavily, and more men than women exceed the maximum alcohol consumption recommended by the National Board of Health. Further analysis shows that neither educational level nor civil status contributes to explaining the sex difference in heavy smoking. For excessive alcohol consumption, single men and single women differ much more than do men and women who are married or cohabiting.

10 Perspectives

Although a main objective of the report was to describe the epidemiology of men's health and thereby focus on men, the report often compares men with women. Men's health is often placed in perspective by comparing it with women's health. This poses a great paradox that has not yet been resolved. Compared with women, higher proportions of men rate their health more positively, feel well enough to do what they want, have better self-reported mental health and feel very vibrant. Men have less self-reported illness and use less over-the-counter and prescription medicine. Registry information confirms that men have fewer general practitioner consultations than women do and use less prescription medicine than women do.

Nevertheless, men have about 4 years lower life expectancy than women do, and men have a higher hospital admission rate (excluding sex-specific reasons for admission) and have more emergency-room consultations than women do. Compared with women, men have higher mortality from: accidents; suicide; and diseases of the genitourinary system; and they have more hospital admissions for: diseases of the genitourinary system; cancer; infectious diseases; mental and behavioural disorders due to psychoactive substance use; schizophrenia, schizotypal and delusional disorders; behavioural and emotional disorders with onset usually occurring in childhood and adolescence; and disorders of psychological development. Only differences in men's and women's smoking habits, alcohol consumption and use of psychoactive drugs seem to explain men's higher hospital admission rate and higher rate of premature death compared with women.

This report poses several questions and paradoxes that have not been or cannot be resolved within the framework of the report.

For example, men surprisingly are prescribed less medicine for circulatory diseases than women are but have higher hospital admission rates and higher mortality from these diseases.
Another unexplained paradox is that men have higher mortality than women but men have fewer general practitioner consultations. Is the reason, for example, the threshold for how ill men and women have to be before they decide to consult a doctor? Do men and women differ in the types of symptoms that get them to consult a doctor?
A third question is the contradiction between the high proportion of men 65–79 years old who report having high health-related quality of life and the high rate of suicide in this group.

The deeper analysis of sex differences also leads to new questions and considerations. For example, why is civil status associated with the sex difference in hospital admission rates among people 16–59 years old but not among people 60 years and older?

Thus, further analysis and studies are still needed that can contribute to explaining the sex differences in the population health status in Denmark and the use of health care services.

Part 2

11 Literature review of effective interventions that focus on promoting men's health

Methods

This review is based on "What works with men? A systematic review of health promoting interventions targeting men" by Robertson et al. published in 2008 (1). Robertson et al. systematically reviewed studies from 1990 to 2006 that evaluate the effectiveness of interventions targeting men.

Our supplementary review focuses on studies published between 2005 and June 2010 based on the search strategy described in Robertson et al. (1). The Library of the National Board of Health performed the literature search in June 2010 in the following databases: MEDLINE®, Embase®, PsycINFO® and CINAHL®.

The focus was solely on studies within a narrow range of study designs, since the review aimed to find studies that measure effects. Our study reviewed and assessed the quality of all articles included by our review and by the review of Robertson et al. (1) by using the Quality Assessment Tool for Quantitative Studies developed by the Effective Public Health Practice Project in Canada (http://www.ephpp.ca/PDF/QATool_Dec_2009.pdf). The Quality Assessment Tool for Quantitative Studies categorizes studies as having strong, moderate or weak quality. In addition, the overall discussion of the findings of the review describes other qualitative aspects.

Results

The literature search identified 1336 articles. The titles and abstracts were examined, and 36 articles were ordered and thoroughly reviewed; 13 met all the inclusion criteria. Together with 27 studies found by Robertson et al. (1), the 40 studies focused on the following topics: smoking cessation, diet and physical activity, risk factors for cardiovascular diseases, screening for prostate cancer, testicular cancer and skin cancer, alcohol consumption and metabolic risk factors. The complete report reviews the findings for each topic.

Conclusion

Robertson et al. (1) concluded that most of the existing knowledge in this field is related to health challenges specific to men, such as prostate cancer, in contrast to general health challenges that are relevant to men and women. Further, the review does not provide any basis to conclude that targeting men in interventions is more effective

than creating interventions for everyone (1). Our review supports this conclusion, since we similarly found that most of the studies focused on screening for prostate cancer. Nevertheless, our review adds new topics and new studies to the systematic review of Robertson et al. The studies have received an average rating of 2.5 (with 2 being "moderate" and 3 "weak"). This is a low rating, and the results of the studies should therefore be interpreted based on this. Very few studies report the follow-up of the effects of the interventions in the longer term. We cannot therefore conclude whether the interventions have long-term effects.

Some interventions within the individual topics seem to be effective in influencing men's health. For example, self-help manuals, videos and other informational materials seem to be useful in getting men to stop smoking. Effective interventions have been identified that focus on diet and physical activity both as objectives in their own right but also as a way of reducing related diseases. The combination of dietary guidance and measuring serum cholesterol appears to be effective in reducing fat consumption among men, and using Internet-based weight-loss interventions seems to be effective. Further, high-intensity exercise training seems to be more effective than low-intensity exercise training, and the effects of high-intensity exercise training seem to last longer. Workplaces appear to be potential settings for health promotion interventions related to diet and physical activity targeting men but also for reducing the risk factors for cardiovascular diseases. Stress management seems to be more effective than education in reducing the risk factors for cardiovascular diseases. When the focus is on reducing metabolic risk factors among men, interventions focusing on diet and physical activity, singly or in combination, seem to be effective. For prostate cancer, interventions focusing on increasing knowledge about this disease are effective in improving people's knowledge.

Further, such interventions may reduce men's levels of decisional conflict.[1] Interventions focusing on self-examination seem to be effective in reducing testicular cancer. General practitioners seem to be able to influence screening behaviour by personal communication with men through a patient-specific reminder system and preferably involving the men's family members at home.

Our review found that most of the studies include interventions that can directly be transferred to settings in Denmark. Nevertheless, context-dependent factors may be decisive in determining the effect of the interventions. Documenting the effects of the interventions Denmark's 98 municipalities initiate is therefore crucial. Knowledge about men's health is still a relatively new field of research. Studies with large study populations are therefore still needed to generate even more evidence supporting and knowledge about effective health promotion and disease prevention initiatives targeting men in the future. The municipalities can also contribute to this with knowledge from the interventions they initiate locally.

Based on our review, we conclude that several effective measures exist that can improve men's health. Nevertheless, we cannot conclude that solid evidence supports

[1] Decisional conflict is defined as "personal uncertainty about which course of action to take when choice among competing options involves risk, regret or challenge to personal life values" (2).

these initiatives, and more and larger studies are therefore still needed. Further, we cannot conclude that targeting men with interventions is more effective than creating interventions targeting everyone. Thus, more knowledge about men's health is still needed.

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12 Summary

This report has two parts. The first part summarizes the physical and mental health status of men in Denmark and selected determinants of health and risk factors for ill health. It also analyses whether educational level and civil status may contribute to explaining how men and women differ in their use of health services (hospital admission rate and use of general practitioner services) and differences in men's and women's health behaviour.

The second part reviews literature studies that attempt to find methods and settings that are effective for intervening to promote health and prevent disease among men.

This summary outlines the results from these two parts.

The description of men's health and illness status shows that men generally have better self-reported health-related quality of life and better self-reported mental health than women do. Thus, a higher proportion of men than women rate their health as being excellent or good, a higher proportion of men than women say that they have good mental well-being and feel vibrant, and men rate their mental health status more positively than women do.

Men report less illness than women do, including both the prevalence of long-term illness and the prevalence of several specific diseases and the prevalence of general symptoms, pains or complaints within the past 14 days. Morbidity generally increases with increasing age. The most common long-term diseases among men are: musculoskeletal disorders; cardiovascular diseases; respiratory diseases; injuries; diseases of the nervous system, eye and adnexa and ear and mastoid process; and endocrine, nutritional and metabolic diseases. The most common types of general symptoms, pains or complaints among men are musculoskeletal pain, tiredness, difficulty in sleeping and headache. Men report using less over-the-counter and prescription medicine than women do, and fewer men than women report limitations in activity caused by illness.

The description also shows that men have more inappropriate health behaviour than women do. This applies to smoking, alcohol consumption, dietary habits, body mass index, use of psychoactive drugs and sedentary leisure activities, although more men than women engage in moderate to strenuous physical activity at leisure.

Men's self-reported morbidity increases with increasing age. Morbidity generally declines with increasing educational level. Except for alcohol consumption, the proportion of men with appropriate health behaviour increases with increasing educational level. Civil status is not clearly associated with health behaviour, but married or cohabiting people seem to generally have the most appropriate (health-promoting) behaviour.

Basing the description of men's health on registry-based information, the Danish Registry of Causes of Death shows that life expectancy in Denmark is 76.5 years for males and 80.8 years for women and that mortality is higher among men than among women in all age groups.

The most frequent causes of death are diseases of the circulatory system, cancer (neoplasms), diseases of the respiratory system, mental and behavioural disorders and diseases of the digestive system. Men's mortality is 1.5 to 2.5 times higher than women's for several causes of death: suicide, accidents and diseases of the genitourinary system.

The Danish National Patient Registry generally shows that women have more hospital admissions lasting at least 24 hours (including sex-specific diseases) and outpatient hospital contacts than men do but fewer emergency room consultations. The hospital admission rate for men increases with increasing age. The most frequent reasons for hospital admission among men are circulatory diseases, cancer, injury and poisoning, digestive diseases and respiratory diseases. The relative differences in the causes of hospital admission between men and women are greatest in relation to circulatory diseases and mental disorders followed by diseases of the skin and subcutaneous tissue, respiratory diseases and certain infectious and parasitic diseases.

Data from the Danish Psychiatric Central Research Registry show that the most frequent causes of admission to a psychiatric hospital among men are: schizophrenia, schizotypal and delusional disorders; mental and behavioural disorders due to psychoactive substance use; and mood (affective) and neurotic, stress-related and somatoform disorders such as depression and anxiety. More than twice as many men as women were hospitalized for mental and behavioural disorders due to psychoactive substance use, and a higher proportion of men than of women was hospitalized for: schizophrenia, schizotypal and delusional disorders; behavioural and emotional disorders with onset usually occurring in childhood and adolescence; and disorders of psychological development.

Data from the Danish Public Health Insurance Registry show that men have fewer average general practitioner consultations than women but similar numbers of consultations with specialist physicians. The average number of general practitioner consultations increases sharply with increasing age, whereas the number of consultations with specialist physicians varies little with age.

Data from the Danish Registry of Medicinal Product Statistics show that fewer men than women receive prescription pharmaceuticals and that the use of prescription medicine increases with age. This sex difference applies to all pharmaceutical product categories. The most frequently used prescription pharmaceuticals for men are those for treating infectious diseases, circulatory diseases, diseases of the nervous system, diseases of the skin and subcutaneous tissue, respiratory diseases and musculoskeletal disorders.

The in-depth analysis of civil status and educational level as possible explanations for the differences in how men and women use health services and their lifestyles shows that men have a higher hospital admission rate (excluding sex-specific diagnoses) and fewer consultations with general practitioners than women do. Further, more men than women are heavy smokers and more men than women exceed the maximum alcohol consumption recommended by the National Board of Health.

Among people 16–59 years old, single men have a lower hospital admission rate than single women, whereas married or cohabiting men have a higher rate than married or

cohabiting women. Lifestyles seem to be associated with some of the sex difference among single people but not among those married or cohabiting.

Again among people 16–59 years old, men with 5 years or more of higher education have a higher admission rate than women with a similar educational level, whereas men have a lower admission rate than women among those with 4 years of higher education or any lower educational level.

Among people 60 years and older, neither sociodemographic not lifestyle factors are associated with the higher admission rate of men compared with women. Neither civil status nor educational level is associated with the sex differences in use of general practitioner services.

Educational level is not associated with the sex differences in lifestyle, and civil status is only associated with the sex difference in exceeding the maximum alcohol consumption recommended by the National Board of Health: the difference between single men and women is much greater than between men and women who are married or cohabiting.

The literature review of effective interventions that focus on promoting men's health is an update of a review of studies published from 1990 to 2006 Robertson et al. used to produce "What works with men? A systematic review of health promoting interventions targeting men" in 2008. The update shows that the evidence base for initiatives to promote men's health has been growing since 2005 but is still sporadic. Most knowledge is related to health problems specific to men, in contrast to health challenges relevant to both men and women.

Examples of interventions that seem to be specifically effective in improving men's health are self-help manuals, videos and other information material produced to promote smoking cessation. Internet-based weight-loss programmes are claimed to be effective among men.

Men want to participate in health promotion and disease prevention initiatives in places they already frequent. The workplace is indicated as an appropriate setting.

Interventions targeting testicular cancer that provide information on the disease and self-examination significantly affected the prevalence.

The review confirms the article of Robertson et al. in not providing any basis to conclude that targeting men in health-promoting interventions is more effective than creating interventions to improve health for everyone.

Evidence on health promotion and disease prevention interventions that can positively influence men's health is very sparse, both for sex-specific health challenges and for general health challenges, and the need for more knowledge is great.