

Chapter 1

Introduction to the Psychology of Reproductive Health

Physiological and genetic factors have long been known to influence reproductive outcome (Galton, 1869). For example, children born to teenage parents or parents of advanced age are at risk of numerous adverse birth and health outcomes (Liu, Zhi and Li, 2011) including well-described disadvantages such as low birth weight and Down syndrome, prevalent in younger and older parents, respectively. However, advanced parental age has also been associated with positive characteristics, such as higher intelligence, in the children. Figure 1.1 (adapted from Ellis, 1926) shows the ages of the parents of 299 'eminent' men to demonstrate that there was a clear majority of elderly fathers among them. More recent research has continued to explore the fascinating early findings of positive effects of parental age on the intellectual abilities of the offspring and alternative explanations have been sought. Influence of parental age on intelligence of the offspring does not seem to be mediated by confounding demographic or other socioeconomic factors (Cohen *et al.*, 1980). Instead, higher maternal age may be more important to superior intelligence test scores in offspring than paternal age (Saha *et al.*, 2009). These inconsistent findings may be due to difficulties defining intelligence, or because testing for intelligence is not sufficiently broad (as it does not include accomplishments, creativity, personality variables and so on). In health or birth outcome terms, the optimum age to have children is 25 to 35 years (Thurstone and Jenkins, 1931), with increasing paternal age resulting in poor outcomes, such as more spontaneous abortions (Kleinhaus *et al.*, 2006) and older maternal age increasing the risks for miscarriage, stillbirth and ectopic pregnancy (Andersen *et al.*, 2000). Both also affect longevity in the offspring (Lansing, 1947), a variable not yet conquered by researchers.

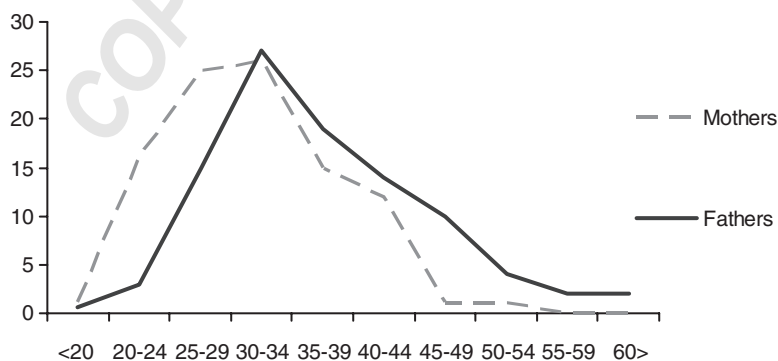


Figure 1.1 Maternal and paternal ages of 'eminent' men studied by Ellis (1926).

Unlike the early observations of Galton and others in the nineteenth century, research and developments across the twentieth and twenty-first centuries has shown that our survival is increasingly less subject to natural selection. Changes in our behaviours have also brought about changes in our reproductive health. We now use many forms of medicine, both traditional and Western, therapeutic interventions such as organ transplantation and screening in and out of targeted chromosomal characteristics. There are regional, demographic and socioeconomic and behavioural differences in interventions in natural selection, as well as in many other aspects of reproductive functioning.

1.1 Maternal Morbidity and Mortality

Although women live longer than men (Population Reference Bureau, 2000), they are at a disadvantage because of their reproductive capacity; they can die as a result of pregnancy, labour and delivery, or post partum. It is well known that across the world, maternal mortality and 'near miss morbidities' occur disparately between rich and poor countries (Ronsmans and Graham, 2006). Near miss morbidity refers to events that would have resulted in maternal mortality during pregnancy, childbirth or within the 42 post partum days, if medical or other intervention had not occurred (Say, Pattison and Gulmezoglu, 2004). Even within countries, ethnicity confers an increased risk for maternal mortality (CDC, 1999) and for differences between men and women in general (Anderson *et al.*, 1996). Brown *et al.* (2011) reported significantly higher near miss mortality among Hispanic women than African-American or White women in the USA, see Figure 1.2.

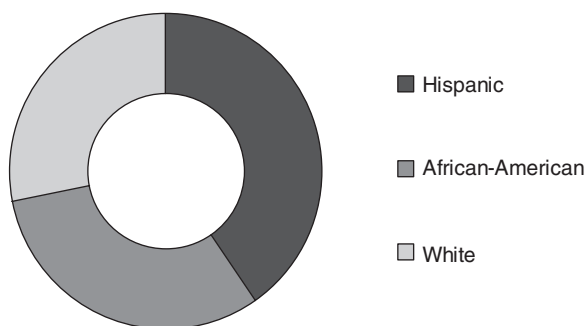


Figure 1.2 Near miss mortality in 12,774 Hispanic, African-American and White women who delivered between 1994 and 2005 in the USA (adapted from Brown *et al.*, 2010).

1.2 Age Shifts and Reproductive Consequences

In Europe and the USA, demographic studies have shown age-related shifts in pregnancy timing and numbers since the 1980s (Maheshawari, *et al.*, 2009). Women over the age of 35 are now more likely to present as first-time mothers, and they tend to have fewer children. Accompanying the female age shift in reproduction is a male shift, with women still having children with men of equivalent or older ages. Women's (and men's) empowerment, defined as a dynamic process that takes place over time (Lee-Rife, 2010) and that includes resources (e.g. education) and agency (e.g. the ability to act upon goals), affects a person's interaction with the economic, legal, political, cultural, social and psychological domains. These domains affect health, wellbeing and quality of life. This book will address many of the biological, psychological and behav-

ious, social and societal, cultural, regional and economic factors impacting upon reproductive health and illness, and their complexities as shown in Figure 1.3.

The complex interactions between individual differences, behavioural, socioeconomic and biological factors are due to numerous components within each of these domains (Table 1.1). Some of these are not easy to pin down, and many are not considered in research and theory investigating aetiological, causal or contributory factors to the development or maintenance of disease or discomfort associated with reproductive events.

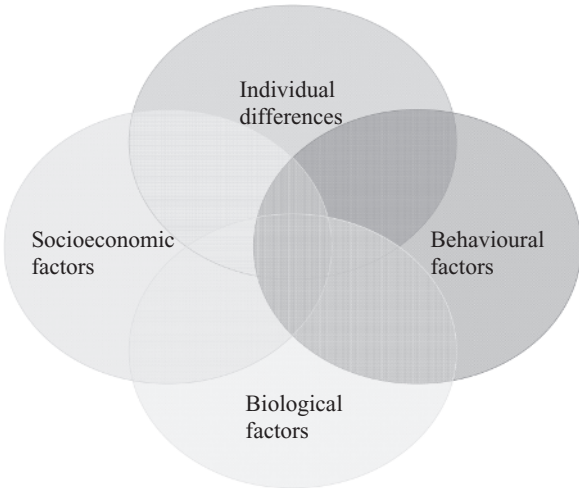


Figure 1.3 Complexities and interactions between individual differences, behavioural, biological and socioeconomic factors affecting reproductive health.

Table 1.1 Components within the socioeconomic, individual differences, behavioural and biological domains

Socioeconomic factors	• Social inequalities • Cultural and religious differences • Educational opportunities • Economic diversity • Occupational costs and benefits • Environmental toxicants / pollutants
Behavioural and lifestyle factors	• Smoking • Drinking alcohol • Drug use • Exercising • Hygiene and health care
Psychological and interpersonal factors	• Personality factors • Stress • Vulnerabilities • Partner, family, friends • Social support • Quality of life
Biological / genetic factors	• Racial differences • Genetics • Infection • Disease • Disability

1.3 Interactions between Socioeconomic, Behavioural, Biological and Genetic Factors and Reproductive Health

A number of factors such as the shifts in age at first pregnancy, overall fewer pregnancies and shorter periods of lactation, due to the introduction and use of formula milk, have resulted in a longer lifetime occurrence of menstruation, as described in Chapter 11. Age at menarche declined from 17 to 13 years in Europe between 1850 and 1960 (The Plowden report 1967), with averages across the world differing according to geographic, regional, ethnicity and genetic factors (Tanner and Davies, 1985) – varying from 12.5 in the USA (Anderson, Dallal and Must, 2003) to 16.6 in Iceland (Magnússon, 1978). Timing of menarche is influenced by biological, genetic and environmental factors, including nutrition (see Chapter 5). Similarly, age at menopause (last period) shows variations from 40 to 61 in the Western world, (Minkin *et al.*, 1997) averaging at 51 (Kato *et al.*, 1998), although in the Philippines it is 44 years (Ringa, 2000) (see Chapter 19). The introduction and widespread use of contraceptives, particularly non-barrier contraceptives such as the oral contraceptive pill, has led to an increase in sexual freedom (see Chapter 7), decrease in unplanned pregnancies, altered spacing of children within families, and increased incidences of sexually transmitted and reproductive tract infections. In the developed world, the impact of changes in lifestyle, such as people having sex at an earlier age, delayed conception (Jensen *et al.*, 2004; Waters *et al.*, 2006) and interventions in pre-conception and pregnancy care have all had an effect on reproductive health and fecundability. Although efforts are made to reduce teenage pregnancy, little effort has been spent on the problems associated with delayed or postponed childbearing (Soules, 2003).

1.3.1 Religious factors

In the developing world, sexual activity and reproduction are less likely to be influenced by liberal Western social conventions about sex and reproduction, but tend to be ruled by religious doctrines and strong cultural influences (as demonstrated in Chapters 7 and 20). Rural Palestinian couples, for example, adhere to Muslim traditions, such as no sex before marriage (Khwaja, 2003), and Muslim couples usually want to start a family immediately after marriage (Rashad *et al.*, 2005). Nevertheless, fecundability within 1 year of marriage is no better than that reported in Western populations (Issa *et al.*, 2010) (see Figure 1.4).

1.3.2 Social factors

Social factors not directly associated with health, such as the impact of having a child on an individual's financial status, as well as the ability to care for a child in a manner demanded by society as optimal, requires financial stability, which is not always achieved. The United Nations Human Development Index shows that the more a country is developed, the more the opportunity costs for a child (Sorrentino, 1990). A comparison of number of children per woman across different countries shows that industrial countries have a lower birth rate than developing countries. In a study of men and women's desires to have children, men were less likely to express a desire to become a parent than women (Stöbel-Richter *et al.*, 2005). These authors reported that many women in developed countries who were initially intentionally childless, years later

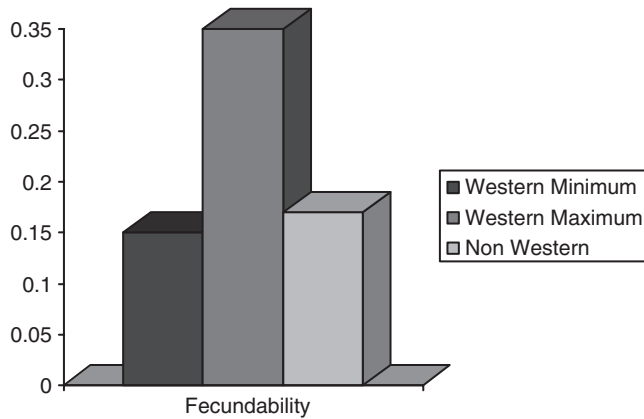


Figure 1.4 Minimum and maximum fecundability estimates in Western populations and recent data from Palestinian non Western, newly married couples (adapted from Issa *et al.*, 2010).

became unintentionally childless (Klipstein *et al.*, 2005) when they reconsidered their life goals and achievements.

1.3.3 Regional factors

At the same time, reports are continuing to reveal the changing quality of semen, with a decrease in semen quality indicated in some countries more than others. These differences are regional, with Danish men producing the lowest sperm concentrations and lowest total sperm counts followed by French, then Scottish men. Men from Finland produced semen with the highest sperm counts, whereas motility is highest in men from Edinburgh. Seasonal variations have been detected in sperm concentrations, with summer months producing about 70% of those in the winter months (Jorgensen *et al.*, 2001). In addition to regional and seasonal differences, testicular germ cell cancer in adult men has increased, and this varies according to geographical location (Adami *et al.*, 1994).

1.3.4 Behavioural and lifestyle factors

The American National Health and Nutrition Survey III has shown that women who start planning a family at a later age are at a greater risk of cardiovascular disease, diabetes, hypertension and congestive heart failure (Alonzo, 2002). These effects involve not only physiological systems such as neuroendocrine and hormonal functioning, but they have psychological and social effects on large numbers of the population. Psychological factors such as coping with stress and adversity, for example, will impact on a developing foetus. Other daily lifestyle factors, such as individuals leading sedentary lives, obesity, smoking and alcohol consumption, have also contributed to reproductive health effects (Kelly-Weeder and Cox, 2006), as shown in Chapters 8

and 9. Adverse lifestyle behaviours, for example smoking, increases the risk of premature and low-birthweight infants. Chapters 3 and 4 explain some of the factors affecting gender development and reproductive growth and development. Low-birthweight offspring are disadvantaged from the start with significant and long-lasting effects, such as increased risks of coronary heart disease, type 2 diabetes and obesity in adulthood (Lumley *et al.*, 2009). Occupational risk factors, such as heavy physical labour, exposure to gases and drugs, metals and solvents (Figa-Talamanca, 2006), and chemicals in the environment and in diet (Foster *et al.*, 2008) all have a role in fertility. This book therefore uncovers and brings together a wealth of literature investigating the interactive effects of reproductive functioning and the psychosocial, behavioural, environmental and biological concomitants of these functions and malfunctions, as shown in Figure 1.5

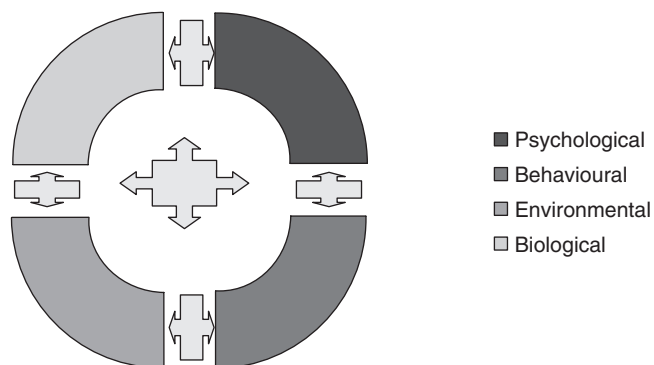


Figure 1.5 Interactive effects of psychosocial, behavioural, environmental and biological factors on reproductive health.

1.3.5 Technological interventions

Some chapters in this book will cover the use of technology that makes sex without reproduction and reproduction without sex possible (Benagiano *et al.*, 2010). The separation of people and interactions previously necessary for reproduction has social, psychological and biological/evolutionary implications. For example, Chapters 9 and 10 demonstrate the effects of the personal relationships of people involved in some assisted reproductive interventions; the social, gestational or genetic parent(s) and the genetically, gestationally or socially connected children. Sex without reproduction has implications for the young (Chapter 4) and the old (Chapter 20), and for people attracted to the same sex (Chapter 18). Advances in reproductive biology have had numerous substantial effects on some populations, with possibilities of eliminating (or choosing to screen out) some of the 370 X-linked recessive disorders that have been identified (McKusick and Amberger, 1993). Cryopreservation of oocytes is now, like semen cryopreservation, a reality, allowing women to postpone childbearing beyond their limited reproductive lifespan for non-medical reasons. A recent survey of Belgian population attitudes of just over 1000 women's opinions of oocyte preservation for social reasons showed about half the women would not consider it, but about 30% would potentially consider doing this in the future (see Figure 1.6, adapted from Stoop, Nekkebroek and Devroey, 2011). The potential oocyte freezers wanted more children and had more liberal and open views of oocyte donation.

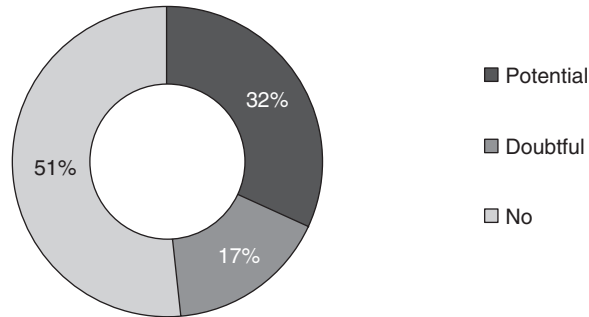


Figure 1.6 Women potentially, unlikely and definitely not willing to consider freezing their oocytes for future use.

The reproductive health literature is, however, plagued by much research using insufficiently powerful study designs, often because some populations are either relatively small such as surrogate mothers, as discussed in Chapter 10, or rare, such as people born intersex, as discussed in Chapter 3. Some research uses small samples because specific populations are unwilling to expose their concerns and feelings to researchers, as has been reported for parents of gamete donor offspring (Chapter 10) or women undergoing abortions (Chapter 14) or miscarriages (Chapter 13). Other research lacks theoretical models, such as older people's sexual and reproductive risk taking behaviours (Chapters 20 and 21) leaving researchers unable to pose predictive research questions. This is surprising because in many ways older people's decision-making, knowledge and understanding of risk factors mirror those of adolescents where health theoretical input has been plentiful. This book attempts to draw together much of the better literature using a multidisciplinary perspective, even when the populations they are drawn from are small or the research lacks theoretical guidance.

1.3.6 Socioeconomic factors

The socioeconomic gradients in health behaviours are in part determined by the socioeconomic life course concept (Kuh *et al.*, 2004), which links socioeconomic circumstances in childhood, such as parental education or housing, to educational pathways, such as age leaving full-time education and own occupation. These socioeconomic gradients have been useful in explaining the effects of childhood on for example, smoking status (Brunner *et al.*, 1999) and obesity (Power *et al.*, 2005), which are mediated by educational achievement and current occupation. Similarly, early or single motherhood have been reported to compound the effects of childhood disadvantage (Graham, 2007). The influential and much-cited Marmot review (and its later strategic review, published by the Department of Health, 2010) stresses that dealing with health inequalities is not a luxury; it is a matter for social justice, with economic benefits and savings. The review stressed that narrowing the gap of the social gradient of health is necessary, and it is not just the most disadvantaged that need tackling by health-care policy.

1.3.7 Political factors

Economic and political factors are important in reproductive health in developed and developing countries across the world. For example, a study using an ecological framework across data

from 16 European countries, Japan and the USA (Tanaka, 2005) has shown that non-paid pregnancy (maternity) leave prior to confinement was significantly related to perinatal mortality and low-birthweight babies (Chapter 16). Similarly, studies of American and Canadian full-time working women found that caesarean deliveries and obstetric complications were reduced in women who received maternity leave 4 weeks or more prior to expected delivery date, compared with women who worked for longer (Guendelman *et al.*, 2009; Xu, Seguin and Goulet, 2002), although this is not always reported (Sysdjo *et al.*, 2006).

1.3.8 Equality factors

Other person in society factors that relate to choice and imposition are known to influence health and health behaviours. The concept of autonomy, particularly in relation to women's rights and gender inequalities are still powerful factors influencing who will live or die. For example, gender inequalities, which have arisen from social standing within a culture or are gained through gender status or power, allow one gender to choose and act on their own choice, and the other gender deals with the esteem imposed on her, rather than by choice (Mason, 1984). Extending this gender inequality to economic power, in societies where women do not have autonomy, control over resources is in the hands of men. Personal autonomy refers to one's ability to influence the environment through personal control over resources and information (Dyson and Moore, 1983). Women who are afforded adequate autonomy can improve and maintain their health and use health-care resources equally devoted to their needs (Fikree and Pasha, 2004). In poor resource areas such as rural India, where health care may be rare and pregnancy care in particular may be inaccessible to women with low autonomy, maternal mortality is still common (Bhat, 2002).

1.3.9 Cultural factors

Similarly, cultural difference can determine health inequality and control over information needed to make evidence-based health-care decisions. Geneticists, social scientists and counselors now include cross-cultural differences and specific issues within their research and practice (Sue and Sue, 1990). Menstrual cycle functions, dysfunctions and related disorders, such as premenstrual dysphoria, have been acknowledged and studied largely in the developed world, as shown in Chapters 5 and 6, although there is evidence indicating it is recognized in non-Western cultures. Similarly, postnatal depressive disorders are recorded in approximately 13% of women in developed (O'Hara and Swain, 1996) and developing countries (Aderibigbe Gureje and Omigbodun, 1993), despite large differences in industrialization, urbanization, medicalization and education. Cultural and traditional beliefs differ between developed and developing countries and affect diagnostic applicability of health and illness (Alem *et al.*, 1999). A study of sub-Saharan African men and women ranging in age, educational and regional backgrounds showed a number of themes which in their view were associated with abnormal distress states (such as postnatal depression and anxiety) in the postnatal woman (Hanlon *et al.*, 2009); these themes are explored in Chapters 16 and 17. The themes of disappointed expectation and exclusion; exacerbation of pre existing problems; and vulnerability and danger, were based on numerous factors shown in Table 1.2.

Disordered states resulting from these broad culturally enforced themes would lead to spirit attacks, showing that religious, supernatural or even cosmological idioms which fall outside of Western biopsychosocial models of health and illness (Kirmayer, 1989) are cultural discourses prevalent in other society's interpretations of similar ill health states defined by specific criteria

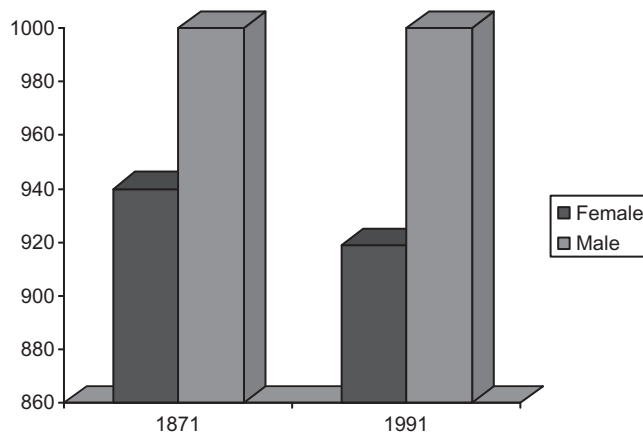
Table 1.2 Factors underlying expectation, exclusion, exacerbation of pre-existing problems, vulnerability and danger

Gender preference
Social exclusion
Poverty
Dependence
Quality of social relationships
Quality of marital relationships
Cultural dissonance

(e.g. DSM IV). Today's multicultural societies' policies determining allocations of resources in health care and education need to take heed of the populations they serve.

1.3.10 Gender factors

Preference for sons in some cultures stems from a need to have sons to maintain the agricultural economy within small holdings and communities (Stockman, 1994), and because it was customary for sons to remain in the parental home and look after parents in old age (Short *et al.*, 2001). However, with the industrial revolution, the preference does not seem to have abated. Female infanticide has been traced back to India, where a female to male ratio of 940/1000 was recorded in 1871, and which is still notable in 1991, with 929 women for every 1000 men (Westley, 1995) as shown in Figure 1.7. South Asian countries including India, Nepal, Bangladesh and China continue to carry out largely illegal sex selective abortions leading to avoidable high maternal mortality (Abrejo Shaikh and Rizvi, 2009), as discussed in Chapter 14. Sex selection, using modern technology for social and economic reasons constitutes a particularly nasty form of discrimination (see Chapter 12). The incidence of female foeticide is possible because the laws regarding abortion are relaxed to accommodate these uses (Abrejo, Shaikh and Rizvi, 2009). However, a study of Chinese adolescent boys and girls who grew up during China's one child

**Figure 1.7** India's female to male ratios in 1871 and 1991.

policy, notes the effects of a parental preference for sons can have a prevailing negative impact upon the children (Siah, 2010), and these issues too need to be addressed in future policy across the world (see Chapter 18).

1.3.11 Accessibility factors

Other important aspects of reproductive health relating to individual in society issues concern the neglect of reproductive health of specific groups of people differentiated by being incarcerated (who will not be further described in this book, but see for example, Jeffcote and Watson, 2004) or otherwise isolated or differentiated because of their abilities. People identifying within the deaf community, for example, consider a genetic risk of deaf children from a different perspective to that of the hearing community (Israel *et al.*, 1992), see Chapter 12. People with other (dis)abilities perceive their status differently from the norm, which tends to (universally) stigmatize difference (Edgerton, 1970), since culture itself defines traditions, normative values and knowledge passed between and within the population of the culture (Coates and Vietze, 1996). Women with mental disabilities are increasingly giving birth to babies (David and Morgall, 1990), partly because their emotional and sexual needs are increasingly becoming recognized (Kempton and Khan, 1991) and deinstitutionalization policies have provided increasingly more opportunities for women with intellectual impairments to have relationships. Mental disability is characterized by significantly below average general intellectual functioning abilities, resulting in people less able to adapt and function within the environment by the age of 18 (Grossman, 1983). At least 4,000,000 individuals in the USA meet the criteria for mental disability due to genetic and environmental factors, and most of these lead independent lives. According to Bergman and Hodapp (1991) people with mild mental disabilities are at a high risk of having children who themselves have a mild mental disability.

1.3.12 Quality of life factors

Nevertheless, from a human rights perspective, all people have a right to an existence marked by quality of life and access to health care, education and employment. From a reproductive health perspective, feminists have increasingly addressed the needs of women with learning difficulties to establish an identity that suits their needs (Burns, 1993) and have addressed issues such as sexuality (McCarthy, 1999), menstruation (Rodgers, 2001) and parenting (Baum and Burns, 2007). Despite this, intellectually impaired women are still being prevented from becoming pregnant, as was reported by Servais *et al.* (2004) in Belgium and in a recent qualitative study of 23 British women with learning disabilities (McCarthy, 2009).

Women with physical disabilities involving a limitation of life activities are understudied. According to the US Department of Health and Human Services (2000), health-related disparities between women with and without disabilities are enormous. Disparities are not just apparent in health but in employment, income, physical activity, stress, depression and access to health care. These disparities may pose an even greater barrier to achieving optimum lifelong health than the disabilities themselves (Thierry and Cyril, 2004). Many women with physical disabilities choose to have children, and they may be at risk of some specific disability related to pregnancy and / or delivery complications (Baschat and Weiner, 2004). Both men and women with physical disabilities now live long lives, but their disabilities may predispose them to other conditions secondary to their disability, affecting health-promoting behaviours (Nosek, 2000). Older men and women's sexual and reproductive health needs are beginning to be studied in earnest (see Chapters 20 and 21) but

not to the same extent as younger people's sexual and reproductive health (Chapter 7), despite trends of increasing longevity warranting health care input into older peoples personal and social needs.

1.4 Summary

In summary, individual differences are many and varied and affect access to health care and health education, satisfaction with the health-care services obtained, understanding of health and illness and health and illness behaviours, as well as the ability to partake in prevention and treatment. Despite the leaps in biotechnological and clinical sciences that have been made in the past 50 years or so, intolerable costs, unequal distribution and quality of health care continue to plague most societies today. Health inequalities exist and are likely to continue into the next five decades. This handbook of reproductive health psychology does not claim to be exhaustive or all inclusive, as that would be a lifetime task. Instead I have taken the liberty to draw on areas that I believe are pertinent to reproductive health psychology, now and in the future. The book seeks to address reproductive health and illness affecting men, women and children of all ages from before conception to old age, taking a lifespan perspective. Research using varied methodological approaches and a range of theoretical models drawn from psychology and related fields are incorporated. These too are not all inclusive as for some areas few or no models are useful or available. Nevertheless, the following chapters promise to be complex, interdisciplinary, devastating, curious, interesting and sensitive.

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