1. Introduction

Mutations in the BRCA1 (BReast CAncer 1) and BRCA2 (BReast CAncer 2) genes place women at increased risk of developing breast cancer. An estimated 60-85% of mutation carriers will develop breast cancer at some time in their lives (Peto & Mack, 2000). Current risk reduction strategies include removal of healthy breasts (prophylactic mastectomy) and oophorectomy and may include future anti oestrogen drug therapies since oestrogen initiates and promotes the growth of breast cancer.

There are several lifestyle factors which have been linked to increased risk of developing breast cancer in the general population such as, excess weight, sedentary lifestyles and high saturated fat diets (Bingham et al., 2003; Harvie, Hooper, & Howell, 2003; Harvie et al., 2005; Thune & Furberg, 2001). To date few studies have investigated how these factors may also influence the susceptibility of BRCA gene carriers to developing the disease. BRCA mutations occur in genes which normally repair damage to DNA, this could imply that lifestyle choices which limit gene damage and halt the progress and growth of damaged cells may be beneficial amongst BRCA carriers (Kotsopoulos & Narod, 2005; Kowalska et al., 2005). Studies into medical records of gene carriers over the past century also show that women living today with a BRCA1 or 2 gene fault can be up to 4 times as likely to develop breast cancer, when compared to women with these faults 40-70 years ago (Antoniou et al., 2003; Evans et al., 2008; King, Marks, & Mandell, 2003; Tryggvadottir et al., 2006). This further suggests a possible link between lifestyle factors and risk of developing breast cancer for this population group. Observational studies have

shown that being a healthier weight and taking regular exercise during adolescence and early adulthood postponed the development of breast cancer in BRCA1 and 2 mutation carriers by some 10 years (King et al., 2003). A recent report from Nkondjock, Robidoux, Paredes, Narod, and Ghadirian (2006) suggested weight control over adult life reduced the likelihood of BRCA linked breast cancer. This suggested link and these initial studies indicate that further research in this area may be expected to provide information which will be beneficial in the management of those individuals with BRCA mutations.

The power of any further studies to investigate links between diet and exercise and the likelihood of BRCA gene carriers developing breast cancer, will be dependent upon the recruitment and compliance of the participants. This in depth interview study plans to explore health beliefs and the reasons for these amongst BRCA carriers. This will provide invaluable data on factors which may promote change and identify barriers which may limit adherence to lifestyle advice. This information will also help inform the best ways to deliver future lifestyle interventions amongst BRCA carriers.

This study aims to explore the health beliefs and the reasons for these beliefs amongst BRCA mutation carriers. Of particular interest will be perceptions related to the potential impact of diet and exercise on risk of breast cancer development.