

Inclusivity Across Exercise Oncology: A Focus on Sexual and Gender Minorities

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ABSTRACT

Research regarding exercise oncology has progressed to include racial and ethnic minority populations in an effort to identify and address disparities, however sexual and gender minorities remain severely underrepresented. Sexual and gender minorities face unique barriers across the healthcare spectrum and are less likely to engage in clinical trials, limiting information gathered about prevalence of cancer, risk of cancer, and effects of exercise on cancer outcomes. In this narrative we will discuss the gap in oncological literature as it pertains to sexual and gender minorities including introducing and defining sexual and gender minority nomenclature, highlighting elevated cancer risks and survivorship trends, as well as a focus on lifestyle modifiable behaviors like exercise to explore potential targeted outcomes and barriers to participation to date. *Journal of Clinical Exercise Physiology*. 2021;10(1):29–34.

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INTRODUCTION

Cancer health disparities are widely documented, however the primary focus of investigation and literature remains relatively exclusive to racial/ethnic minority populations (1). In the field of exercise oncology specifically, recent years have demonstrated a slight increase in the inclusion of racial and ethnic minority groups across clinical trials as we previously reported (2). Results speak to culturally tailored exercise strategies or unique prognostic outcomes that remain specific to a given racial/ethnic group. These studies clearly illuminate the need for further investigation into specific minority groups that may be disproportionately affected by cancer or who have been underrepresented in oncology research altogether. One such population is sexual and gender minorities (SGMs).

SGM encompasses those individuals who identify with a diverse spectrum of sexual orientations, reproductive development, and gender identities, including, but not limited to, lesbian, gay, two-spirit, bisexual, and transgender, as well as queer/questioning and intersex (3). SGM span ages,

racess, ethnicities, geographic regions, and socioeconomic statuses, and therefore are central to inclusive oncological research. Current epidemiological studies elucidate that SGM persons demonstrate lower rates of cancer screenings, have higher rates of cancer mortalities (4), and per the perspective of lifestyle modifiable behaviors like exercise (5), SGM cancer survivors report increased risky behaviors (i.e., illicit drug use, cigarette smoking, and alcohol abuse) and decreased global health status when compared to cisgender, heterosexual counterparts (6). With up to one million cancer survivors identifying as SGM in the United States alone (7), the paucity of evidence across the oncology literature, let alone that of exercise oncology, is evident. This underrepresentation is noted within clinical practice as well, most recently analyzed by Sutter et al. (1) conducting a national survey inquiring about knowledge, attitudes, and practice behaviors among oncologists toward SGM care. Oncologists report limited knowledge on treating SGM individuals and have called for increased education regarding specific disparities that may affect this population in an effort to develop

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quality, individualized care that aligns with a person's presenting identity (1).

Thus, the overarching goal of this clinical commentary is to discuss the gap in oncological literature as it pertains to SGM, including introducing and explaining SGM nomenclature, elevated risks and survivorship trends, as well as a focus on lifestyle modifiable behaviors like exercise, potential targeted outcomes, and barriers to participation to date. We recognize that SGM disparities across health literature are poorly defined, and that this clinical commentary is limited in its own scope to capture the full spectrum of SGM representation, however this body of knowledge is critical to providers, researchers, and individuals who seek to bolster inclusivity across healthcare. Therefore, we seek to address knowledge gaps and future directions necessary to progress the field of exercise oncology to include SGM cancer survivors.

NOMENCLATURE AND DEMOGRAPHICS

The National Institute of Health defines SGM as a diverse body of individuals whose sexual orientation, gender identity, and reproductive development are not characterized by binary constructs of sexual orientation, gender, and/or sex (3). This is to say, it is of primary importance to healthcare providers, researchers, and readers of this commentary to first delineate sex, gender identity, and sexual orientation in order to capture the multiplicity of SGM nomenclature. Table 1 includes definitions, per the Center for Disease Control (8) and the University of California Berkeley's Gender Equality Resource Center (9), of sexual orientation and gender diversity. It is important to note that where sex is rooted in medical, reproductive, or biological terminology, gender refers to social constructs, categorizations, or expectations of an individual's chosen identity (8,9). Therefore, these 2 terms are fundamentally different.

CANCER DISPARITIES WITHIN SGM

Specific Tumor Types/Prevalence

SGMs are faced with an increased risk for physical and mental health disparities, such as depression, anxiety, suicide, substance abuse, and obesity (6). Along with these mental and physical health disparities, SGMs are at an increased risk for some cancers. Seven sites that may disproportionately affect SGMs for cancer risk include: anal, breast, cervical, colorectal, endometrial, lung, and prostate cancer (6). Human papillomavirus contributes to higher rates of anal cancer among men who have sex with men and cervical cancer among lesbian and bisexual women (6). Increased risk of colon and rectal cancer may be attributed to elevated risk factors, such as smoking and obesity, with similar conclusions being made between smoking habits and the development of lung cancer in the SGM community (6). Increased risk factors for breast and gynecologic cancer are present in the lesbian population and include fewer pregnancies, less total months pregnant, fewer children, fewer total months breastfeeding, higher body mass indices, exercise fewer times per week, and fewer breast self-examinations performed (10).

Increased risk for breast cancer is also seen in transgender women (male to female gender) and a reduced risk in transgender men (female to male gender). The risk in transgender women is associated with hormone treatment during the individual's transition process (10). For those transgender individuals that are insured, transgender females reported lower prostate cancer risk, but higher endocrine and viral infection-induced cancers, while insured transgender males reported higher risk of breast cancer, smoking, and viral infection-related cancers (cervical cancer) (10). The literature currently available regarding cancer risk provides some insight into the SGM population, however, it is limited for both ethnic and sexual minorities (10).

Exercise has been shown to improve cancer risk (11), however there is a severe lack of research done among SGMs regarding exercise and cancer risk. Given the unique cancer risks in SGMs, clinical exercise physiologists would benefit from acquainting themselves with the health disparities this population faces. This knowledge will provide clinical exercise physiologists with a better understanding on how to prescribe exercise, including exercise for those transitioning patients or those who have already transitioned. This is important because these individuals may or may not still have their birth sex-specific organs and might require adjusted exercise prescription based on the aforementioned cancer risk.

Screen Rate Concerns

The SGM community continue to face barriers in regard to healthcare, including cost, generalized fear or anxiety, and limited education on SGM-specific needs across healthcare providers (6). SGMs are less likely to receive cancer screenings when compared to their heterosexual counterparts (10). Decreased screening rates contribute to higher prevalence of cancer and for late-stage cancer diagnosis (10). It has been suggested that lesbian and bisexual women are less likely to get mammography because of barriers to healthcare coverage and poor relationships with healthcare providers (6). Minority status has also been linked to lower rates of adherence to cervical cancer screening for lesbian, gay, bisexual, and transgender individuals, with black lesbian, bisexual, and queer women reporting negative experiences and discrimination from their provider (12). Individuals with lower education report to be less aware of the risk between human papillomavirus and cancer and less adherent to cancer screening (12). Lack of knowledge regarding increased cancer risk can be an important contributor to poor screening in SGMs and is cited as the most frequent barrier to cancer screening, with fear of discrimination as the second (12). Clinicians and researchers face a challenge of disseminating screening knowledge and cancer risk, while also creating a welcoming environment to improve the health of SGMs.

Mortality Rate Concerns

Recent research has shown that SGMs have poorer cancer outcomes and poorer quality of life, often because of decreased rates of cancer screening and cancers detected at later stages (10). SGMs also report lower incomes and less satisfaction

TABLE 1. Sexual and gender minority definitions and nomenclature.

Term	Definition
Bisexual	A person whose primary sexual and affectional orientation is toward people of the same and other genders, or toward people regardless of their gender.
Cisgender	Individuals whose current gender identity, or performance in gender, is the same as the sex they were assigned at birth.
Gay	A person who is attracted primarily to members of the same gender. Gay is most frequently used to describe men who are attracted primarily to other men, although it can be used for men and women.
Gender	A social construct defined as the cultural roles, behaviors, activities, and attributes expected of people based on their classification as a man, woman, or some other identity.
Gender Expression	How an individual chooses to present their gender to others through physical appearance and behaviors, such as style of hair or dress, voice, or movement. Individuals may embody their gender in a multitude of ways and have terms beyond these to name their gender expression(s).
Gender Identity	An individual's sense of their self as man, woman, transgender, or something else, which may or may not correspond with the sex and gender one is assigned at birth.
Gender Minority	Individuals whose gender identity (man, women, other) or expression (masculine, feminine, other) is different from their sex (male, female) assigned at birth.
Gender Nonbinary	Individuals who do not identify their gender as man or woman. Other terms to describe this identity include genderqueer, agender, bigender, gender creative, etc. Gender expression falls outside of the dominant societal norm for their assigned sex, is beyond genders, or is some combination of them.
Gender Nonconforming	The state of one's physical appearance or behaviors not aligning with societal expectations of their gender (a feminine boy, a masculine girl, etc.). The term is more commonly used to refer to gender expression (how one behaves, acts, and presents themselves to others) as opposed to gender identity (one's internal sense of self).
Heterosexual or Straight	A man who is primarily attracted to women or a woman who is primarily attracted to men.
Intersex	An umbrella term to describe a wide range of natural body variations that do not fit neatly into conventional definitions of male or female. Intersex variations may include, but are not limited to, variations in chromosome compositions, hormone concentrations, and external and internal characteristics.
Lesbian	A woman who is primarily attracted to other women.
Polygender or Pangender	Exhibiting characteristics of multiple genders, deliberately refuting the concept of only 2 genders.
Queer	An umbrella term sometimes used to refer to the entire Lesbian/Gay/Bisexual/Transsexual community. Historically, queer has been used as an epithet/slur against people whose gender, gender expression, and/or sexuality do not conform to dominant expectations. Some people have reclaimed the word queer and self-identify in opposition to assimilation. For some, this reclamation is a celebration of not fitting into social norms.
Questioning	The process of exploring and discovering one's own sexual orientation, gender identity, or gender expression.
Sex	An individual's biological status as male, female, or something else. Sex is assigned at birth and associated with physical attributes, such as anatomy and chromosomes.
Sexuality	The components of a person that include their biological sex, sexual orientation, gender identity, sexual practices, etc.
Sexual Minority	Individuals who identify as gay, lesbian, or bisexual, or who are attracted to or have sexual contact with people of the same gender.
Sexual Orientation	Sexual orientation is an enduring emotional, romantic, sexual, or affectional attraction or nonattraction to other people and the behavior and/or social affiliation that may result from this attraction.
Trans or Transgender	An umbrella term encompassing individuals whose internal knowledge of gender is different from conventional or cultural expectations based on the sex that person was assigned at birth.

with standard of living (13), which could potentially contribute to these mortality rate concerns. SGMs may forgo care and treatment because of costs, increasing risk of worsening prognosis. Delays in treatment because of mistrust in health care providers or fear of discrimination or stigma are also contributing factors (13). Concrete data regarding mortality risk in

SGM patients with cancer remains lacking, thus resulting in speculation of the mortality risks in this population.

Behavioral Concerns

Concerns regarding risky behavior and social isolation are elevated within SGM populations when compared with

heterosexual, cisgender counterparts (4). Across multiple studies, adverse risk behaviors have been identified including increased rates of illicit drug use, higher odds of cigarette smoking, and heightened alcohol abuse. Such behaviors are associated with lower self-reported health status and excess distress, both proven determinants of poorer oncological outcomes. In addition to the aforementioned risks, SGM patients with cancer and survivors report higher incidence of social isolation, which may inherently prove part of a negative feedback loop triggering adverse behaviors (14,15).

Survivorship Concerns

Survivorship care plans have expanded in recent years among major cancer centers and community cancer clinics. However, specific and unique survivorship care needs of SGMs should be considered and included in more centers and clinics. Because of mental and physical health disparities that preexist in this population, it is critical to address survivorship needs that explore potential worsening of these health disparities because of cancer diagnosis and related treatments. Survivorship concerns include social isolation, poor quality of life, depression, anxiety, sexual dysfunction, and cancer-specific concerns (i.e., lymphedema related to breast cancer) (16). Unfortunately, survivorship research among SGMs is lacking and makes it difficult to ascertain additional unique barriers to personalize survivorship care. Nonetheless, given the profound impact exercise has on mental and physical health, professional exercise guidance may be even very necessary for SGMs.

EXERCISE DISPARITIES WITHIN SGM

Exercise Participation Concerns

Although there is limited evidence, data suggest that exercise disparities between heterosexual and sexual minority youths exist, with adolescent and young adult sexual minorities participating in less moderate and vigorous exercise and team sports (5). This reduction in participation could place this population at higher risk of obesity and associated serious health problems continuing into adulthood (e.g., cardiovascular disease and diabetes). Sexual minorities already suffer from elevated mental health concerns as compared to their heterosexual counterparts (17). For example, SGMs are at an increased risk for depression, anxiety, suicide, and substance abuse (6). Therefore, introduction of exercise, which has been shown to improve mental health (5), should be examined in this population.

Barriers to Exercise Participation

Disclosure of sexual orientation and/or gender identity is the most recognizable and possibly provides the most hinderance to addressing SGM disparities within the fields of oncology, exercise, or healthcare in general. Sexual orientation and gender identity are fundamental components to a patient or participant's identity that may elucidate specific health needs or vulnerabilities that may displace or incorrectly characterize an individual if unknown to healthcare professionals. Given the nuanced and generally misunderstood nature of appropriately

categorizing SGM individuals, specifically within the medical or research setting, it remains challenging to assert why there are such low numbers of studies within this population across oncology literature. It is possible this is because of the lack of national data on estimated cancer incidence and prevalence within SGM. However, the etiology of this gap remains unclear (18,19). Across most population health and epidemiologic studies, SGM information is not known or collected (18). Cancer registries do not collect information on sexual orientation of individuals diagnosed with cancer, making it difficult to determine whether cancer is more prevalent among individuals who identify as SGM (20). On a patient level, studies have illustrated that SGM individuals likely prefer to disclose sexual or gender identity to providers, however a myriad of factors including provider type, setting, and/or rapport may complicate disclosure of their identity (4), with most citing apprehensiveness about the quality of care they may receive (21) or subsequent patient-provider interaction difficulties (22). Without adequate disclosure, an assumption of heterosexual orientation and/or cisgender identity may lead to isolation of the SGM population from global participation in clinical trials, feeling misunderstood by providers, being socially isolated from potential cohorts, or even facing being stigmatized by the system at large (22–24). Taken together, patients or participants who identify within SGM may not be prompted to report their identity at the organizational level of health systems, or they may not feel comfortable disclosing their sexual/gender identity, generating the current gap in our knowledge base regarding oncology, exercise, or healthcare. These barriers of disclosure effectively undermine the importance of understanding and addressing of clinical and research participation disparities within this population, and remain the fundamental obstacle to addressing inequalities, research-related issues, and improving care delivery systems for the SGM community.

FUTURE DIRECTIONS

Exercise Prescription Considerations

Generalized exercise prescription guidelines for cancer survivors provide a starting point for clinical exercise physiologists and the SGM community with cancer (25). However, specific research on the SGM population is warranted. The psychosocial disparities of this population coupled with the unique challenges for transitioning individuals and associated cancer risks places a great importance on better understanding and tailoring exercise prescription to benefit this population. Exercise has shown to improve many outcomes in cancer survivors, including an array of psychosocial outcomes including anxiety, fatigue, depression, and quality of life, while also improving physical outcomes such as physical function, cardiorespiratory fitness, and muscular strength (25). Research into ideal dosing of exercise has the ability to improve physical health and mental health, not only in SGM cancer survivors, but also those at increased risk of developing cancer.

Improving the education of exercise professionals will be of critical importance for SGM cancer patients and survivors to improve patient experience and care. A position

statement regarding reducing cancer health disparities among SGMs was released by the American Society of Clinical Oncology and outlines gaps between patients and healthcare providers. This includes the discrimination and stigmatization that surrounds this population and recommendations to improve policies and procedures in the medical field (26). The position statement highlights the need for curricular changes within academic institutions, research centers and across healthcare organizations in order to improve care for SGMs (26), something that should be adopted in the exercise oncology field as well. It would be advantageous to train exercise professionals on the risks and disparities of SGMs and cancer, improving quality of care and addressing needs specific to this population. Incorporation of certificate trainings within exercise organizations focused on this population can better prepare exercise professionals to treat SGMs and potentially improve their cancer survivorship. Training the next generation of exercise professionals will not only benefit SGM patients but will hopefully initiate more research interests in this understudied population and draw more awareness to the needs of this community.

Among SGM cancer survivors, an ongoing trial conducted by Kamen et al. (27) is looking to test preliminary efficacy, acceptability, and feasibility of a dyadic exercise intervention. Cancer survivors and their nonprofessional caregivers as dyads will be randomized to either an active comparator group where both the caregiver and survivor exercise, or an individual exercise group where only the survivor is prescribed exercise. Both groups will partake in a progressive daily walking and resistance exercise program 3 days per week for 6 weeks. The primary outcome will focus on self-reported psychological distress with secondary measures examining biological endpoints such as cortisol, serum amyloid A, and C-reactive protein, and mechanistic outcomes like support and adherence (27). This first-of-its kind study will provide important data on psychological and biological interaction in this population in regard to exercise. Results from this study will potentially shed light on optimal exercise prescriptions when targeting biological or psychological markers, as well as offer insight into strategies to potentially increase adherence to exercise through use of dyadic interventions.

Targeted Exercise Intervention Outcomes

Given the health disparities this population faces, targeted exercise-related outcomes for future research should focus on physical and mental health. As stated, exercise has been shown to positively influence physical outcomes in cancer survivors (25). However, these findings have not been tailored to SGM populations, thus hindering their generalizability to this population. The focus on developing ideal exercise prescriptions while targeting psychosocial outcomes also remains important as many SGMs suffer from symptoms like depression and anxiety (6) prior to the burden of cancer treatment or potential side effects. Exercise can improve quality of life, anxiety, stress, and depression in

non-SGM populations (25) and could potentially benefit SGMs more than their heterosexual counterparts. By identifying the effect of exercise on physical and psychosocial outcomes within the SGM cohort, exercise guidelines can be developed to best address the specific needs of this population. Engaging in exercise interventions could also provide a sense of community for SGMs, potentially reducing feelings of isolation. Further considerations for targeted outcomes include examining bone and musculoskeletal health, maintenance of a healthy body weight, physical function, as well as other physical health outcomes that have yet to be specifically targeted in this population. Exercise has shown improvements in bone health in some cancer survivors (28), may assist with maintenance of body weight (29), and effectively improves physical function and other physical outcomes (25), making it an ideal nonpharmacologic strategy for improving SGMs' overall health and wellbeing.

CONCLUSIONS

SGM encompasses a spectrum of individuals who identify outside of the binary of sexual orientation, gender, and/or sex. Though this term remains broad in capturing of diversity of this minority group, as a population, SGMs experience a myriad of disparities associated with poor oncologic outcomes, including higher rates of mortality, lower rates of screening, and broad psychosocial and physical predispositions that may further complicate said outcomes. With a wide gap in the knowledge and understanding of SGM disparities to date, across both researchers and providers, there is an imminent call to action to address established inequalities, dismantle barriers and bolster implementation of care, ultimately to improve cancer outcomes. Exercise has been shown across several oncological populations to bolster global health status that may assist in combating present disparities, including those that stand out among SGM individuals, including psychosocial factors, such as anxiety, depression, and isolation. Tailoring exercise programs in future research to specifically target these outcomes may prove successful in attenuating inequity of care. However, the first step in developing and disseminating exercise information in response to oncological disparity within the SGM community is acknowledgement and identification of this population within the healthcare spectrum. Disclosure of SGM identity status remains possibly the most important obstacle in moving forward with inclusivity and equity across research and healthcare practice. As the SGM population spans all races, socioeconomic classes, and, inherently, sexes, characterization for purpose of research remain far more unclear; however, this ubiquity of SGM culture threaded throughout society underscores the importance of highlighting and addressing a group in need. As healthcare professionals including clinical exercise physiologists, our role is to first examine the issue and respond accordingly to create a safe space for SGMs to be included within the greater spectrum of oncological exercise research and outcomes.

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