Creating Musculoskeletal Programs for Culturally Diverse, Underserved Communities: a Community-Based Participatory Research Survey

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Abstract *Background:* Arthritis and other musculoskeletal diseases are the most prevalent health conditions in the USA, causing enormous financial and social burdens, especially in underserved communities. Targeted care and prevention programs are urgently needed. *Questions/Purposes:* Within an overall goal of revealing health disparities, the questionnaire explored (1) the use of and access to healthcare, (2) the factors affecting quality of life, and (3) the levels of provider–patient communication. *Methods:* A New York City musculoskeletal hospital conducted a community health needs survey among its diverse ethnic/racial communities. A 39-item questionnaire was administered online, by mail, and in person (in English, Spanish, and Chinese). Answers were analyzed in terms of sociodemographics, to define health disparities within a total sample and two subsamples. *Results:* In the total sample, respondents were 60%

White, 16% Black, 14% Hispanic/Latino, and 11% Asian, mostly female, and aged 50 to 79. More than 17% of the total sample indicated they could not access a healthcare provider when needed. Poor nutrition and lack of physical activity were large areas of concern, as were falls and poor self-reported health status. Nearly all respondents said they took steps to communicate with their healthcare providers. Dramatic health disparities were found between Whites and non-Whites (e.g., non-Whites were most likely to rate their health poorly, consider their diet fair or poor, lack health insurance, and be unable to access a healthcare provider). *Conclusion:* The findings are being used to further refine, develop, and expand the hospital's community programs, especially for culturally diverse and underserved communities.

Keywords arthritis · community health needs survey · culturally diverse · health disparities · musculoskeletal health

Level of Evidence: Socioeconomic Analysis Level II

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Introduction

Arthritis and musculoskeletal diseases are considered the most prevalent health problems in the USA [3]. The economic and human burden of osteoarthritis (OA) and other musculoskeletal diseases is enormous and continues to increase as the US population ages [7]. It is estimated that almost 50 million US adults have some form of musculoskeletal disease (OA, rheumatoid arthritis [RA], gout, lupus, or fibromyalgia) [5] and that the cost is \$128 billion a year [4]. At the same time, the older population is projected to increase to 55 million in 2020 (a 36% increase) and to about 72.1 million by 2030, over twice the number in 2000 [20]. These issues are particularly troubling for public health, as mobility and quality of life can be severely affected. OA alone accounts for disability or activity limitation in 21.1 million US adults [5], while osteoporosis affects 9 million Americans and is the leading cause of fractures in the aging population [16]. Research indicates that these conditions can

have a dramatic impact on employment, with lost productivity, increased sick leave, and healthcare expenses all contributing to the financial strain [12].

Education and support services around prevention and treatment of OA and other musculoskeletal diseases are important steps in helping to reduce their economic burden. While more musculoskeletal programming is needed for all Americans, it is especially important to address this issue with underserved, culturally diverse communities. The impact of race, ethnicity, income, and insurance status on quality healthcare and optimal outcomes is enormous, and the disparities exist on a broad scale [14]. The Institute of Medicine and its co-authors have summarized a large body of evidence, and report that health services in general for racial and ethnic minorities are of lower quality [6]. Such minorities also carry a disproportionate share of the burden of musculoskeletal disease: African Americans have a higher prevalence of doctor-diagnosed arthritis and functional limitations than other racial/ethnic groups [5]; Hispanics/Latinos have more arthritis-related mobility limitations and more severe pain than Whites [23]; and in both African Americans and Hispanics/Latinos, rates of joint replacement are lower than for Whites [23]. In terms of lupus (a chronic and potentially life-threatening autoimmune disease that generally affects women between the ages of 15 and 45), Asian, Black, Hispanic/Latino, and Native American women are afflicted two to four times more than white women and suffer worse outcomes [1].

The past decade has seen a rise in the use of community-based participatory research (CBPR) to better address public health needs. CBPR was developed with the aim of helping vulnerable communities by involving them in decision-making and by incorporating community practices [15]. Active community participation can have important effects on health behaviors and outcomes [15]. As a partnership among academic institutions, organizations, and community members, CBPR represents a collaborative approach that moves from research to reflection to action. A survey involving the public is one of the many different forms that CBPR can take.

The Hospital for Special Surgery (HSS) is a musculoskeletal and rheumatologic hospital and teaching center in New York City affiliated with Weill Cornell Medical College. HSS is a leader in the field whose mission is to improve quality of life and mobility through patient care, research, education, and community programs and services. The hospital, which collaborates with a number of local, regional, national, and international partners (Table S1), has long used CBPR to assess the needs of its diverse communities and has a history of providing a wide range of public health programs focused on a variety of musculoskeletal and rheumatologic conditions dating back to its National Institutes of Health designation as a multipurpose arthritis center (in 1989). HSS performs CBPR both independently and in collaboration with the Clinical Translational Science Center based at Weill Cornell Medical College. While HSS is located on the Upper East Side of Manhattan, it serves some of the most vulnerable New York City communities.

A newly established federal guideline enacted as part of the Affordable Care Act requires that all nonprofit hospitals conduct a community health needs assessment (CHNA) every three years; collect racial, ethnic, and language information to identify disparities; and develop an implementation plan based on its findings. HSS recently conducted such a CHNA, with the overall purpose of identifying the specific musculoskeletal needs and health disparities of the various communities it serves, in order to develop new or refine existing services, particularly for diverse and underserved communities, children, and older adults. Analysis of the data using sociodemographics (race/ethnicity and other variables) was vital to highlight important missing information and target our programs appropriately.

The aim of this study was to evaluate three specific areas (including the health disparities within each) including (1) a better understanding of use of and access to healthcare, (2) identification of the leading factors that affect quality of life, and (3) determination of the level of provider/patient communication.

Methods

The Questionnaire

A 39-item questionnaire was developed over several months by the HSS Public & Patient Education Department, in conjunction with the Department of Social Work Programs, with input from various internal stakeholders and community groups (Table 1). Eighteen of the questions were from previously validated measures (see Supplemental Table S2). The survey covered the following four areas: (1) musculoskeletal and rheumatologic health conditions and management, (2) quality of life, (3) use of and access to healthcare, and (4) sociodemographic characteristics. Validated measures on the questionnaire were used to explore levels of physical activity, mental health, chronic disease self-efficacy, and health literacy (understanding medical instructions or materials). It was administered in English, Spanish, and Chinese. Translations were conducted by CP Language Institute, an external company employing accredited translators. Approval was obtained from the HSS Institutional Review Board.

Table 1 Community partners consulted for the development of the questionnaire

Arthritis Foundation—New York chapter
Clinical & Translational Science Center, Weill Cornell Medical College
East Side Council on the Aging (ESCOTA)
General Human Outreach in the Community, Inc. (GHO)
Hunter College School of Social Work
Lenox Hill Neighborhood House
Medicare Rights Center
National Osteoporosis Foundation
S.L.E. Lupus Foundation
Translational Research Institute for Pain in Later Life (TRIPLL)

Sample Selection and Survey Administration

The surveys were administered over four weeks, from late February to mid-March of 2013, by mail, electronically, and in person, and the replies were anonymous. The hospital used a convenience sample and purposely surveyed both people previously diagnosed with musculoskeletal disease, via the mail and in-person groups, and a population-based sample (the electronic group).

Mail Surveys were mailed using existing mailing lists from the Public & Patient Education Department (4,233) and the Department of Social Work Programs (603). This population had some form of contact with HSS (been a patient, attended a lecture or exercise class, participated in a program, or received a newsletter).

Electronic E-mails were sent to a list (purchased from Dataline, Inc., Princeton, NJ) of 20,000 people unknown to HSS (not all from New York City), and the survey was also posted on the HSS website, Facebook, and Twitter.

In Person Surveys were either handed to a person or left on display in patient waiting areas in the HSS Ambulatory Care Services (clinics), in groups led by the Department of Social Work Programs, and in two Chinatown senior centers. Surveys were self administered.

Statistical Analysis

Descriptive statistics were used to analyze sociodemographic data, and chi-square tests were used to assess relationships between variables. SPSS version 20 was used to analyze the data, and significance was set at $P \leq 0.05$.

Primary analysis was performed for the total sample, and two secondary analyses were performed: subsample 1, HSS Ambulatory Care Center patients (a more racially/ethnically diverse and low-income patient group), and subsample 2, respondents who either had public insurance (Medicaid or Medicare and Medicaid) or no insurance. To ensure that the specific concerns of all the communities we reached out to were identified, the demographic data were analyzed (by race/ethnicity, age, etc.) to highlight health disparities within the population (Table 2).

Results

We received 1,084 replies, mostly (92%) completed in English (Spanish, 5%; Chinese, 3%). By mail, 521 responses were received in English, 30 in Spanish, and 6 in Chinese. In-person responses were as follows: 234 in English, 26 in Spanish, and 26 in Chinese. Web responses were the following: 238 in English, 2 in Spanish, and 1 in Chinese. The most effective mode of administration was by mail, representing 51% of the total responses (a 12% response rate (Supplemental Table S3), which could be calculated because we knew how many we had mailed; we were

unable to calculate the web response rate, as the number of possible respondents was infinite). For a summary of major survey results, see Table 3.

Sociodemographics

More than 74% of respondents in the total sample and two subsamples were female (for all sociodemographic data, including percentages, see Table 2). Respondents in the total sample were generally older (46% were 60 to 79 years old), while those in subsample 1 were slightly younger (30% were 50 to 59 years old), and subsample 2 represented a cross section of both groups (48% were 50 to 69 years old). In the total sample, respondents were 60% White, 16% Black, 11% Asian, and 14% Hispanic/Latino (2010 US Census data for New York City 33.3% White, 22.8% Black, 12.6% Asian, and 28.6% Hispanic/Latino [18]). In contrast, Whites were a minority in subsamples 1 and 2 (42 and 19%, respectively). In the total sample and the two subsamples, the respondents were highly educated: 35% of the total and 37% of the two subsamples had education beyond college. The annual household income varied greatly across the total sample and subsample 1; in subsample 2, 49% of respondents reported their household income was less than \$10,000. More than half of the total sample and subsample 2, as well as three fourths of subsample 1, lived with others. The preferred language for discussing healthcare was English in the total sample and both subsamples. Sixteen percent of both the total sample and subsample 1 said they generally needed assistance to read healthcare-related materials, whereas a larger proportion of subsample 2 (32%) said they needed such assistance.

When we analyzed the data by sociodemographic variables, dramatic differences and health disparities were brought to light. The three main areas we explored are described below, with an emphasis on health disparities.

Use of and Access to Healthcare

Healthcare Access Seventeen percent, 19%, and 27% of the total sample and subsamples 1 and 2, respectively, were unable to access a healthcare provider when they needed one. In the total sample, respondents aged 30 to 39 years (38%), followed by those aged 40 to 49 years (27%), were most likely to indicate that they were unable to access a healthcare provider in the past year ($P \leq 0.001$). Asians (23%), followed by Blacks (20%) and Hispanics/Latinos (20%), were the most likely and Whites least likely (14%) to report issues around accessing a provider ($P \leq 0.05$). Barriers to access included lack of coverage by their insurance plan, transportation/accessibility issues, affordability, long wait times, and language problems.

Healthcare Coverage Ninety-eight percent of respondents (total sample and both subsamples) had healthcare insurance, but racial/ethnic disparities were found. In the total sample, Asians (6%) (followed by Hispanics/Latinos [5%] and Blacks [2%]) were the most likely to lack health insurance ($P \leq 0.001$). Sixty percent of the total sample (and 55%

Table 2 Demographics of the survey respondents (%)

Characteristic	Gender		Age (years)									Race/ethnicity				Level of education			
	Female	Male	Age (years)									Black	White	Asian	Hispanic/ Latino	<High school	Completed high school		
			Under 20	20–29	30–39	40–49	50–59	60–69	70–79	80–89	90 and over								
Total (<i>n</i> =1,084)	82	18	2	4	5	9	16	23	23	15	2	16	60	11	14	10	12		
Subsample 1 ^a (<i>n</i> =232)	74	26	1	10	11	18	30	16	10	3	0	21	42	13	24	7	9		
Subsample 2 ^a (<i>n</i> =265)	83	17	2	9	9	13	22	26	14	3	2	33	19	23	26	7	9		
Characteristic	Level of education		Annual household income										Marital status						
	>High school	Completed college	Post- college	Annual household income										Single (never married)	Married	Living together as couple	Divorced	Separated	Widowed
				<\$10,000	\$10,000– \$14,999	\$15,000– \$24,999	\$25,000– \$34,999	\$35,000– \$49,999	\$50,000– \$74,999	\$75,000– \$99,999	\$100,000 or more								
Total (<i>n</i> =1,084)	21	22	35	15	7	9	8	10	14	10	26	32	32	4	16	2	13		
Subsample 1 ^a (<i>n</i> =232)	20	28	37	29	9	12	5	9	6	6	25	36	33	5	15	4	7		
Subsample 2 ^a (<i>n</i> =265)	20	28	37	49	16	15	8	8	2	3	0	41	16	5	23	5	11		
Characteristic	Marital status		Preferred language ^b							Place of residence									
	Live alone	English	Spanish	Chinese	Russian	Other	Brooklyn	Bronx	Manhattan	Queens	Staten Island	LI, Nassau County	LI, Suffolk County	Westchester	New Jersey	Other ^c			
Total (<i>n</i> =1,084)	44	88	6	5	0	0	9	8	61	9	1	1	1	2	4	4			
Subsample 1 ^a (<i>n</i> =232)	25	76	12	0	1	1	15	18	24	16	2	2	3	3	9	8			
Subsample 2 ^a (<i>n</i> =265)	39	71	16	12	1	0	20	15	38	21	1	0	1	0	1	3			

LI Long Island

^a Subsample 1, HSS clinics; subsample 2, public health insurance/uninsured^b Preferred language for discussing healthcare^c May include locations outside of New York/New Jersey and global regions

Table 3 Summary of survey findings by sample

	Health conditions and management					
	Musculoskeletal/ rheumatologic condition	Received flu shot ^a (%)	Received mammogram/ Pap smear ^a (%)	Rated diet negatively (%)	Met CDC recommendations for moderate PA (%)	Met CDC recommendations for vigorous PA (%)
Total (<i>n</i> =1,084)	1 OA 2 Osteoporosis 3 RA	76	60	21	16	17
Subsample 1 ^b (<i>n</i> =232)	1 RA 2 OA 3 Other	69	51	31	10	17
Subsample 2 ^b (<i>n</i> =265)	1 RA 2 OA 3 Lupus	68	55	32	13	14

	Health conditions and management			Health and quality of life		
	Reported falling (%)	Sustained fracture from fall(s) (%)	No discussion with provider about fall(s) (%)	Rated health status negatively (%)	Reported 14+ days poor physical health (past month) (%)	Reported 14+ days frequent mental distress (past month) (%)
Total (<i>n</i> =1,084)	34	15	40	32	21	13
Subsample 1 ^b (<i>n</i> =232)	28	12	46	13	14	10
Subsample 2 ^b (<i>n</i> =265)	36	18	45	13	14	10

	Health and quality of life				Use and access to healthcare	
	Activity limitation (past month) (%)	Pain interference with daily lives (past month) (%)	Need help with personal care/ household chores (%)	Reported feeling nervous or anxious (%)	Reported feeling down or depressed (%)	Reporting having healthcare coverage (%)
Total (<i>n</i> =1,084)	13	18	24	19	15	98
Subsample 1 ^b (<i>n</i> =232)	9	11	34	13	10	98
Subsample 2 ^b (<i>n</i> =265)	9	11	43	13	10	98

Use and access to healthcare

	Needed help understanding/using coverage (%)	Difficulties with healthcare provider access (past year) (%)	Always to very often adherent with medical advice (%)	Sometimes adherent with medical advice (%)	Confident to very confident can manage symptoms of condition (%)	Somewhat confident can manage symptoms of condition (%)
Total (<i>n</i> =1,084)	60	17	91	9	60	32
Subsample 1 ^b (<i>n</i> =232)	55	19	90	10	56	34
Subsample 2 ^b (<i>n</i> =265)	55	27	92	8	55	37

	Use and access to healthcare				
	Not at all confident can manage symptoms of condition (%)	Very often to always communicate with provider (%)	Sometimes to fairly often communicate with provider (%)	Almost never or never communicate with provider (%)	Sometimes to always need help with understanding medical instructions or materials (%)
Total (<i>n</i> =1,084)	8	47	45	9	16
Subsample 1 ^b (<i>n</i> =232)	10	44	46	9	16
Subsample 2 ^b (<i>n</i> =265)	8	44	46	9	31

CDC Centers for Disease Control and Prevention

^a Variables included in survey but not reported on in manuscript

^b Subsample 1, HSS clinics; subsample 2, public health insurance/uninsured

of subsamples 1 and 2) said they often needed assistance with understanding and using their health coverage. This need was most often cited by those with lower health literacy (77%) versus those who were more health literate (51%) ($P \leq 0.001$ in the total sample and the two subsamples).

Adherence About 90% of the total sample and the two subsamples said they usually followed their provider's medical advice; however, barriers to adherence were cited in answer to a further question, the most common being concerns about side effects, disbelief that treatment would help, and feeling the condition was not severe. Whites appeared to be the most adherent (with the largest proportion indicating that they "always" or "very often" followed their provider's advice) relative to Blacks and Hispanics/Latinos (96% of Whites in the total sample versus 87 and 90% of subsamples 1 and 2, respectively, at $P \leq 0.001$, and 96% of Whites in subsamples 1 and 2 versus 73 and 89% of subsamples 1 and 2, respectively, at $P \leq 0.01$).

Health Literacy In terms of requiring assistance to read instructions, pamphlets, or other written materials from doctors or pharmacies, 16% of the total sample and subsample 1 said they needed help, in contrast to 31% of subsample 2. In the total sample, 64% of Asians said they needed such assistance, followed by Blacks (41.4%) and Hispanics/Latinos (40.9%). Asians were also the most likely to rate their English relatively poorly (46%) and to prefer a non-English language for discussing medical issues (59%).

Factors Affecting Quality of Life

Musculoskeletal Conditions The leading musculoskeletal health conditions in the total sample were OA, osteoporosis, and RA, while RA and OA were the most common conditions among subsamples 1 and 2. OA, osteoporosis ($P \leq 0.01$ for both), lupus, and fibromyalgia ($P \leq 0.001$) were more common in females, and gout was more common in males ($P \leq 0.001$). OA increased with age, and the likelihood of lupus decreased with age ($P \leq 0.001$), with the highest rates found in teens. Respondents aged 80 to 89 were most likely to have osteoporosis, followed by those aged 70 to 79. Racial/ethnic disparities were also found: OA was more likely to be reported by Whites ($P \leq 0.001$); RA, gout ($P \leq 0.001$ for both), and fibromyalgia ($P \leq 0.01$) by Blacks; and lupus by Asians ($P \leq 0.001$).

Falls Falls were a major issue. Thirty-four percent of total respondents had fallen within the past year, 15% had sustained fractures, and 40% had not discussed the fall with their healthcare provider. The percentages were similar for subsamples 1 and 2. In the total sample, falls were more common among females ($P \leq 0.001$), those aged 90 to 99 ($P \leq 0.05$), Blacks and Whites ($P \leq 0.01$ for both), those with osteoporosis ($P \leq 0.001$; also for subsamples 1 and 2, $P \leq 0.001$ for both), and those who were physically inactive ($P \leq 0.01$). In the total sample, Whites (67%) were the most

likely to discuss a fall with a healthcare provider, followed by Hispanics/Latinos (65%) and Blacks (46%) relative to Asians (38%) ($P \leq 0.01$). In both subsamples 1 and 2, Whites were also the most likely (62%), followed by Blacks (50%), to discuss their fall with their healthcare providers, with Asians and Hispanics/Latinos (both 0%) being the least likely groups to do so ($P \leq 0.05$ for subsample 1, and $P \leq 0.01$ for subsample 2).

Self-Reported Health Status Health was rated poorly (fair to poor) by 32% of the total sample, 13% of subsample 1, and 13% of subsample 2. Musculoskeletal/rheumatologic conditions were linked with level of physical and mental functioning. Those with OA had more physically unhealthy days ($P \leq 0.05$), more pain interference ($P \leq 0.01$), and a greater need for assistance with personal/routine care ($P \leq 0.05$), while those with osteoporosis exhibited more symptoms of anxiety and depression ($P \leq 0.05$ for both). In the total sample and subsamples 1 and 2, Blacks (total sample 51%; subsamples 1 and 2 33%), followed by Asians (total sample 48%; both subsamples 1 and 2 28%) and Hispanics/Latinos (total sample 43%; both subsample 1 and 2 12%), were the most likely to rate their health poorly compared with Whites (total sample 22%; both subsamples 1 and 2 10%), who were the least likely to do so (total sample: $P \leq 0.001$; both subsamples 1 and 2: $P \leq 0.05$).

Diet Twenty-one percent of the total sample rated their diet as poor, as did 31% of subsample 1, and 32% of subsample 2. (The questionnaire outlined the basics of a healthy diet and gave five choices, from "poor" to "excellent.") In the total sample, Hispanics/Latinos were most likely to report that they had received medical instructions to lose weight ($P \leq 0.05$), and Blacks were more often told to modify their diet ($P \leq 0.001$). Barriers to healthy eating included cost, planning constraints, and social pressures, as shown in Table 4. While 34% of the total sample stated that cost was a barrier, 50 and 65%, respectively, of the two subsamples reported cost as a barrier.

Physical Activity Only 17% of the total sample (10% of subsample 1 and 13% of subsample 2) were exercising per Centers for Disease Control and Prevention (CDC)

Table 4 Barriers to healthy eating (%)

Barrier	Total sample	Subsample 1 ^a	Subsample 2 ^a
Healthy foods cost too much	39	51	65
Too much time and effort to prepare	37	22	29
Family and friends do not eat that way	22	23	30
Do not like the taste	21	21	26
Do not know what foods to eat	18	21	25
Lack of access to healthy food	10	14	21

^a Subsample 1, HSS clinics; subsample 2, public health insurance/uninsured

guidelines (75 min of vigorous-intensity physical activity weekly). Similarly, 16% of total respondents, 10% of subsample 1, and 13% of subsample 2 were meeting CDC recommendations for moderate-intensity physical activity (150 min weekly).

Pain Hispanics/Latinos (25%) followed by Blacks (21%) and Whites (16%) were the most likely and Asians (8%) least likely to report that pain interfered with their usual activities for 14+ days ($P \leq 0.01$).

Level of Provider–Patient Communication

Nearly all respondents said they generally took steps to communicate with their healthcare provider, but lower levels of communication were found to be associated with race/ethnicity, such that Asians (total sample 21%; both subsamples 1 and 2 33%), followed by Blacks (total sample 11.1%; both subsamples 1 and 2 22%) and Hispanics/Latinos (total sample 10.6%; both subsamples 1 and 2 10%), were the most likely and Whites least likely (total sample 3%; both subsamples 1 and 2 4%) to report having no communication with their provider ($P \leq 0.001$ for total, $P \leq 0.05$ for subsamples 1 and 2). A low level of provider–patient communication was associated with lower levels of education, income, and health literacy ($P \leq 0.001$ for the total sample and both subsamples).

Discussion

The enormous social and economic burden of OA and other musculoskeletal diseases falls disproportionately on minority populations. Our survey aimed to pinpoint specific needs, in order to expand and develop appropriate prevention and management programs in the hospital’s ethnically diverse communities. CBPR was used, as active community participation can play a critical role in health behaviors and outcomes [15]. Within an overall goal of determining health disparities, we wanted to (1) better understand the use of and access to healthcare, (2) identify the leading factors that affect quality of life, and (3) determine the level of provider–patient communication.

Limitations

One major limitation to this study is sample bias. We received a relatively smaller return from the general population (i.e., people who completed the survey via the HSS website and e-mails). Subsample 2 was composed of HSS clinic patients, representing a sociodemographically diverse population. Responses from the mailing lists present the same issue, as they were from people who have a connection to HSS by attendance at a clinic or a previous educational activity. In addition, older adults were overrepresented. Also, people who complete surveys may have different characteristics from people who do not, and because the majority of respondents were women (due to our sample

being overrepresented by women), men’s health issues are not fully represented. Because the survey responses were derived from self-report, socially desirable responses may have been given. While we made an attempt to reach out to people unknown to HSS, we did not conduct a comparative analysis (those known to the hospital versus the general population). An additional comparative analysis we were unable to conduct (because of the small number of non-English responses) was between languages; this might have been an important independent variable. Another limitation was the use of a convenience sample, which limits generalizations.

Comparisons with Public Health Data

Use of and Access to Healthcare In the total sample, 98% had health insurance, which is higher than the 81% reported elsewhere [19] for New Yorkers. Access to a healthcare provider when the need arose was a gap identified in this survey. More than 17% of total respondents had access issues, compared with 11% of New Yorkers [19] and 5% of Americans [2]. It was unexpected that high levels of adherence to medical advice were reported in the total sample and both subsamples; other research suggests that about 40% of patients do not follow their protocols [13]. Closer examination showed that while patients felt they were “adherent” to their medical advice, certain barriers existed simultaneously, leading us to believe that respondents may have given socially desirable answers. In addition, patients may believe they are more adherent than they are. The study by Martin et al. [13], as well as others, confirms that barriers are a complex issue, clinicians need to probe in order to elicit them, and community programs need to address them.

Quality of Life Falls were a common feature found in the oldest respondents (80 to 99), and OA was most prevalent in women and older adults. This corresponds to data showing that OA is the number one cause of disability in the adult population [3] and that, in 2006, older New Yorkers accounted for more than two thirds of all adult fall-related deaths and hospitalizations [17]. An association was found between falls and osteoporosis in all three samples, reflecting a global figure of 8.9 million fractures a year caused by osteoporosis [9]. Our results support existing research showing that a sedentary lifestyle leads to fragility fractures and that physical activity reduces the risk of osteoporosis, fractures, and fall-related injuries [22]. Only approximately 17% of our respondents were meeting CDC recommendations for both moderate and vigorous exercise, compared with 47% of American adults [2]. Given the high prevalence of musculoskeletal issues and the lack of exercise in our population, there is a pressing need to increase physical activity for managing musculoskeletal conditions; a wider array of targeted exercise programs would be beneficial. Our analysis produced important information on some key health disparities (particularly related to access, diet, and falls) in terms of race/ethnicity, income, and other factors. These data confirm those from public data sources such as

the US Agency for Healthcare Research and Quality [2] and the Commonwealth Fund [14].

Provider–Patient Communication Our findings show that a lower level of provider–patient communication was associated with lower levels of education, income, and health literacy is corroborated by public health data [17]. Similar to our findings, national data also show that Asian-Americans are less likely than Whites, Blacks, and Hispanics to report positive provider–patient interactions [8].

There were a number of differences between public health data and the hospital’s survey data (which, compared with public health sources [2, 17, 19], showed higher RA prevalence, less physical activity, and greater numbers of respondents who rated their health fair/poor, had health insurance, and were unable to access a healthcare provider). We felt these particular differences could be explained by the characteristics of our sample—which was largely female, generally older (covered by Medicare), and had mobility issues related to greater incidence of musculoskeletal disease than the general population. In any case, these data pointed us toward some specific needs.

Community-Based Participatory Research

Our questionnaire was developed using CBPR in collaboration with our community partners (Table 1) to make sure that important issues were covered. One CBPR challenge is dissemination of information back to the participants, which is difficult when the survey is anonymous [15]. To overcome this challenge, it is important to think of alternate ways to communicate results such as the institution’s website and consumer-facing publications like newsletters.

Future Research

Two comparisons are areas for future research (see “Limitations” section): between those known to the hospital versus the general population and between language groups (to develop programs in different languages). Additionally, further study is needed to measure cultural differences between our different ethnic populations, in order to target programs appropriately. The possibility of using a randomized, rather than convenience, sample should also be explored.

Conclusions

Both our results and those of public data sources show that (1) better access to healthcare is needed, for both prevention and management; (2) diet and physical activity are major concerns; (3) there is a need for enhanced provider–patient communication, the lack of which is due to sociodemographic factors such as language, levels of education, income, and health literacy; and (4) targeted health education and support are needed in terms of muscle, joint, and bone health. HSS, which has a long history of serving the community [10, 11,

21, 24], has already begun to institute changes that will address these specific needs and will continue to discuss improvements with its patients, the community, and its community partners to develop/expand programs and services, with a particular focus on addressing health disparities in underserved communities.

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