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BRIEF REPORT OPEN ACCESS

# Preferences Regarding Clinical Drug Trial Elements: A Nationally Representative Survey of Older Adults With Multimorbidity

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## ABSTRACT

**Background:** Older adults with multimorbidity have been under-represented in clinical drug trials. We sought to determine willingness to enroll in trials and preferences of older adults for learning about clinical trials, visit frequency, travel, locations, and testing.**Methods:** Cross-sectional internet and telephone survey of a nationally representative sample of adults  $\geq 65$  years with  $\geq 3$  chronic conditions (NORC University of Chicago Foresight 50+ panel) from March–April 2023 to determine acceptability of aspects of clinical trials.**Results:** Surveyed 1318 (1142 Internet, 176 phone), mean age  $72.3 \pm 6.3$  (SD), 52% women; race: 83% White, 10% Black or African American (BLAfrAm), 5% Hispanic or Latino, 1.1% Asian;  $4.4 \pm 1.9$  chronic conditions (of 16 queried), taking  $7.5 \pm 3.3$  medications. Almost half would consider trials of medications for memory problems, hypertension, cancer, chronic pain, diabetes, or high cholesterol. Men and BLAfrAm respondents were the most willing to consider hypertension or diabetes trials. Preferences for where to learn about trials were physician offices (87% overall, 85% of BLAfrAm, 94% of Hispanic); 10% of White respondents considered senior centers versus 30% of BLAfrAm and 20% of Hispanics ( $p < 0.001$ ). Two-thirds wanted written materials and question and answer sessions (no significant sex or racial differences). Respondents anticipated no difficulty with measuring blood pressure at home, and only respondents  $> 80$  years anticipated difficulty wearing activity monitoring devices. All groups preferred monthly or every 3–4 month visits for physical exams, blood or urine tests vs. less frequently and were willing to travel half an hour in each direction for visits.**Conclusions:** Efforts to increase enrollment of older adults and older adults from previously under-represented racial populations will need increased physician engagement. Pragmatic trials with infrequent participant contact are not likely to increase participation of older adults with multimorbidity.

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## Summary

- Key points
  - Almost half of older adults with multimorbidity are willing to consider clinical trials of medications for conditions common in older adults regardless of sex or race.
  - Older adults with multimorbidity want to learn about clinical trials from physicians, in physician offices with written information and an opportunity for questions and answers, and not in senior centers, libraries, or pharmacies.
  - Older adults with multimorbidity are willing to travel (if less than one half hour each way) for in-person exams and laboratory testing during clinical trials.
  - Older adults with multimorbidity prefer contact with researchers at monthly or every 3–4 month intervals during clinical trials.
- Why does this paper matter?
  - Older adults with multimorbidity have been under-represented in clinical drug trials.
  - To increase participation, clinical trials and clinical trial designs need to be aligned with their preferences.
  - Our results demonstrate the importance of involving physicians in discussions of clinical trials and trial designs that include contact with researchers at monthly or quarterly intervals during clinical trials regardless of sex, race, or very old age.

was adults over age 65 self-reporting  $\geq 3$  chronic conditions. The final sample was made nationally representative by weighting with base weights of the inverse probability of selection from the NORC frame adjusted to account for unknown eligibility and nonresponse among eligible participants.

Survey responses were in yes/no format and 3- and 4-pt Likert scales. Questions were based on literature review, cognitive testing with older adults with multiple chronic conditions, NORC consultation, and pilot testing. NORC distributed surveys, collected responses, provided unweighted and weighted results to the investigators, and issued participant compensation.

Descriptive statistics were calculated and responses examined by age, sex, and self-reported race and ethnicity (collapsed to non-Hispanic White, non-Hispanic Black or African American (BLAfrAm), Hispanic, non-Hispanic Asian, other). Chi-square tests assessed the association between categorical demographic variables and binary responses, and analysis of variance evaluated differences in continuous and scale responses across subgroups. Multivariable logistic regression evaluated predictors of responses indicating unwillingness to consider trials. Descriptive statistics and comparative analyses were computed using NORC-provided survey weights. The Survey (svy) estimation procedure in Stata version 17 was used for statistical computations.

The University of California, San Francisco (UCSF) Institutional Review Board (IRB) approved the study protocol and served as the single IRB for UCSF and the University of California, Los Angeles. NORC IRB also reviewed and approved the survey for distribution and reporting.

## 1 | Introduction

Older adults are under-represented in clinical trials including evaluations of new medications [1–8]. Suggestions to improve participation of older adults have been made [2–5, 9] but viewpoints of older adults about study components have seldom been collected. Changes in clinical trial design and conduct are unlikely to have an impact unless they align with the perspectives of currently under-represented older adults with multimorbidity.

We surveyed a nationally representative sample of older adults with multimorbidity to elucidate barriers and motivators for clinical trial participation [10]. This paper presents their views on types of studies they might join, how and where they want to learn about clinical trials, the acceptability of common research procedures, and preferences for the frequency of data collection and visits. We also compare responses between sexes, races, ethnicities, and very old adults compared to younger old adults.

## 2 | Methods

We conducted a cross-sectional survey from March 13, 2023 to April 27, 2023, using the National Opinion Research Center (NORC), University of Chicago Foresight 50+ panel created in 2021 by the American Association of Retired Persons and NORC. This is a probability-based representative panel of civilian non-institutionalized U.S. adults > age 50 years, stratified by age, race/ethnicity, education, and sex. Details of panel recruitment and weighting are online ([Foresight50.NORC.org](https://foresight50.norc.org)). Study inclusion

## 3 | Results

### 3.1 | Participants

Invitations were sent to 10,779 Foresight 50+ panel members; 3329 replied and were screened (31%) and 40.3% met eligibility criteria (Supporting Information: Item 1). Surveys were received from 1340 and analyzed for 1318 (22 did not meet quality controls). Participant characteristics are in Table 1. Mean age was  $74 \pm 6.3$  (SD) years, with 54% aged 70–79, 18% between 80 and 89, and 1.3% > age 90. Most were White; percentages of women and men were equal, and most lived in metropolitan areas. Participants self-reported  $4.6 \pm 2$  of 16 common chronic conditions (see Supporting Information: Item 2 and 3). Twelve percent had previously joined a clinical trial of a medication.

### 3.2 | Conditions for Which Participants Would Consider Participation in a Clinical Trial of a Medication

Respondents would participate in a trial to test a medicine if they had memory problems (52%), hypertension (50%), cancer (48%), chronic pain (44.5%), diabetes or high cholesterol (44% each), and wanted to slow aging (38%). Men were more likely to consider joining trials than women for hypertension, cancer, diabetes, and high cholesterol (see Table 2), and BLAfrAm participants were more likely to consider joining trials for

**TABLE 1** | Survey-weighted respondent characteristics.

Total <i>n</i>	1318
Age, years, mean (SD)	74.0 (6.3)
Less than 80, <i>n</i> (%)	1063 (80.7)
80 or more, <i>n</i> (%)	255 (19.3)
Sex, <i>n</i> (%)	
Male	663 (50.3)
Female	655 (49.7)
Race/ethnicity, <i>n</i> (%)	
White, non-Hispanic	1022 (77.5)
Black or African American, non-Hispanic	148 (11.2)
Hispanic or Latino	102 (7.7)
Asian, non-Hispanic	13 (1.1)
Other	33 (2.5)
Number of prescription medications, mean (SD)	7.7 (3.6)
Number of medical conditions mean, (SD) <sup>a</sup>	4.4 (1.8)
Survey mode, <i>n</i> (%)	
Phone	235 (17.8)
Internet	1083 (82.2)
Geographic region, <i>n</i> (%)	
Northeast	254 (19.3)
Midwest	284 (21.5)
South	530 (40.2)
West	249 (18.9)
Metropolitan vs. rural area, <i>n</i> (%)	
Non-metropolitan	230 (17.4)
Metropolitan	1088 (82.6)
Education level, <i>n</i> (%)	
Less than high school	163 (12.4)
High school graduate or equivalent	418 (31.7)
Some college/associate degree	313 (23.7)
Bachelor's degree	199 (15.1)
Post graduate study/professional degree	225 (17.1)
Annual household income, <i>n</i> (%)	
Less than \$30,000	349 (26.5)
\$30,000 to under \$60,000	433 (32.8)
\$60,000 to under \$100,000	282 (21.4)
\$100,000 or more	255 (19.3)
Adequate health literacy <sup>b</sup>	1088 (82.9)

<sup>a</sup>Of 16 conditions queried in the survey (selected from the 10 most frequent conditions in older adults (minus dementia), plus cancer, liver disease, and stroke commonly included in co-morbidity indices, and atrial fibrillation, osteoporosis, gastroesophageal reflux/ulcers and thyroid disorders present in over 10% of older adults without sex specificity).

<sup>b</sup>Adequate health literacy defined as those who were “extremely” or “quite a bit” confident with filling out medical forms by themselves [11].

hypertension, diabetes, and high cholesterol than White or Hispanic participants. There were no significant differences by sex, race, or age for considering trials for slowing aging or chronic pain. Thirty-one percent of women would join a trial of an osteoporosis medicine and 41% of men with prostate enlargement would join a treatment trial. Only 15% of participants would not join any of these types of trials. Multivariate analysis found women and those > 75 years of age were less likely to join trials, while education level, income level, and race did not affect this consideration (see [Supporting Information](#): Item 4).

### 3.3 | Where and How Respondents Would Like to Learn About Clinical Trials

Seventy-three percent preferred to learn about clinical trials individually, but slightly over half of BLAfrAm respondents preferred to learn in a group vs. 23% of white non-Hispanic participants and 28% of Hispanic participants (Table 2). Preferred sites for hearing about trials were physician offices (87%) hospitals (41%), in homes (30%), at pharmacies (17%), at senior centers (14.5%), a place of worship (6%), and at a library (5%) (Table 2). Sessions at senior centers were preferred by 30% of BLAfrAm and Hispanic respondents versus 11% of White respondents. Preferences for sessions in religious institutions were noted by 20% of BLAfrAm respondents compared with 11% of Hispanic and 4% of White respondents. Women chose group settings more than men (33% vs. 21%) as did more BLAfrAm respondents compared to White or Hispanic respondents (55% vs. 23% or 28%, respectively).

Respondents preferred information about clinical trials in written materials (68% overall without detectable age, sex, or racial differences), by question-and-answer sessions (60%), or watching videos (51%). Slightly fewer of those > 80 years of age chose hearing talks than those < 80 years of age (33% vs. 40%). Getting information by telephone was chosen by 17% overall but by 35% of BLAfrAm respondents and 24% of Hispanics compared to 14% of White respondents (Figure 1).

### 3.4 | Perceived Difficulty With Potential Study Procedures

Only 5%–10% of respondents reported difficulty checking their blood pressure at home, without differences by sex, race, or age group ([Supporting Information](#): Item 5). Sixteen percent of BLAfrAm respondents and 14% of those over age 80 years of age anticipated difficulty with physical activity monitoring devices, and 11.5% of BLAfrAm would have difficulty with home delivery of study supplies. In contrast, ≥ two-thirds would find travel over 1 h each way to a research site difficult, with women (76.4% vs. 55% of men) and those > age 80 anticipating the most difficulty (70.8% vs. 64.4% if < 80 years).

### 3.5 | Willingness to Undergo Examinations and Travel During a One-Year Clinical Trial

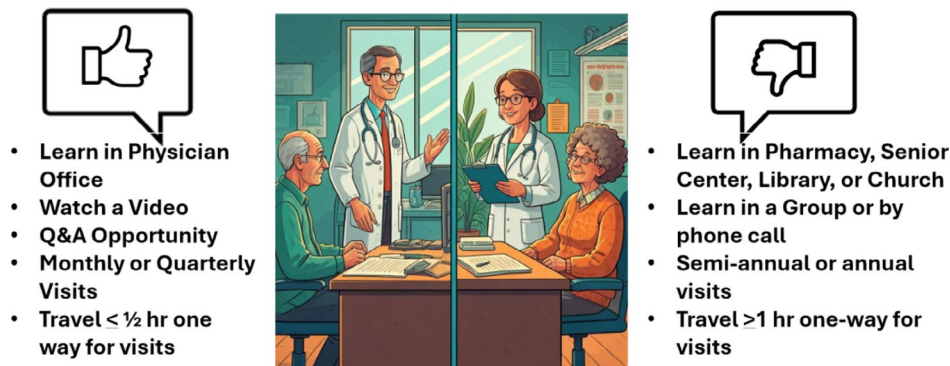
About one-third were willing to have physical exams monthly and another third every 3–4 months. Fewer selected twice (21%)

**TABLE 2 |** Willingness to consider trials for conditions and preferences for how and where to learn about trials: Overall, by sex, by race, and by age.

	Total, n (%)	Female	Male	p	White, NH#	Black, NH	Hispanic	p	<80years	≥80years	p
Total, n (%)	1318 (100)	655 (49.7)	663 (50.3)		1022 (77.5)	148 (11.2)	102 (7.7)		1063 (80.7)	255 (19.3)	
If you had this condition, would consider joining a clinical trial for											
Memory problem	685 (51.9)	325 (49.7)	359 (54.2)	^	532 (52.1)	72 (48.6)	61 (59.9)	^	1063 (80.7)	109 (42.9)	*
Hypertension	654 (49.5)	270 (41.2)	385 (58.0)	***	474 (46.4)	105 (71.0)	53 (51.8)	***	535 (50.3)	119 (46.9)	^
Cancer	637 (48.3)	290 (44.3)	347 (52.3)	*	492 (48.1)	83 (56.1)	49 (48.2)	^	524 (49.3)	113 (44.5)	^
Chronic pain	587 (44.5)	310 (47.4)	277 (41.7)	^	439 (43.0)	88 (59.2)	48 (47.0)	°	482 (45.3)	106 (41.4)	^
Diabetes	578 (43.9)	248 (37.8)	330 (49.8)	**	418 (40.9)	95 (64.5)	45 (44.1)	**	487 (45.7)	96 (37.8)	*
High cholesterol	583 (44.2)	244 (37.2)	339 (51.1)	***	425 (41.6)	90 (60.8)	47 (46.1)	*	486 (45.7)	96 (37.8)	°
Slowing aging	498 (37.8)	236 (36.0)	262 (39.6)	^	379 (37.1)	62 (42.0)	41 (40.4)	^	401 (37.7)	97 (38.1)	^
Osteoporosis	202 (31.5)	217 (30.8)	NA		152 (30.1)	36 (40.2)	8 (20.4)	^	157 (29.8)	45 (34.6)	^
Where would you prefer to learn about clinical trials (location): ~											
#5Doctors office	1049 (87.2)	573 (87.4)	577 (87.0)	^	888 (86.9)	126 (85.3)	96 (93.8)	^	936 (88)	214 (84)	^
Hospital	546 (41.4)	265 (40.4)	281 (42.4)	^	416 (40.7)	73 (49.3)	43 (42.3)	^	435 (40.9)	111 (43.5)	^
Home	400 (30.4)	169 (25.8)	231 (34.9)	*	308 (30.1)	45 (30.3)	35 (34.4)	^	342 (32.2)	58 (22.7)	*
Pharmacy	221 (16.7)	117 (17.9)	103 (15.6)	^	160 (15.7)	40 (26.7)	18 (17.9)	^	171 (16.1)	49 (19.4)	^
Senior center	191 (14.5)	111 (16.9)	80 (12.1)	°	116 (11.3)	44 (29.9)	30 (29.5)	***	144 (13.5)	47 (18.5)	^
Library	66 (5)	39 (6)	27 (4)	^	46 (4.5)	11 (7.7)	8 (7.5)	^	54 (5.1)	12 (4.7)	^
Church/temple	82 (6.3)	45 (6.8)	38 (5.7)	^	40 (3.9)	30 (20.1)	12 (11.4)	***	53 (5)	29 (11.4)	*
If you were to consider joining a trial, how would you prefer to hear about it											
With a group	351 (27.1)	215 (33.3)	136 (20.9)	***	233 (23.2)	82 (55.3)	28 (27.9)	***	283 (26.8)	68 (28.1)	^
Individually	944 (72.9)	430 (66.7)	514 (79.1)		769 (76.8)	66 (44.7)	71 (72.1)		770 (73.2)	174 (71.9)	
Which of the following would you like for getting information about clinical trials ~											
Written materials	902 (68.4)	446 (68.1)	456 (68.7)	^	704 (68.9)	101 (68.2)	61 (60.2)	^	758 (71.3)	144 (56.6)	**
Question and answer session	795 (60.3)	419 (64.0)	376 (56.8)	°	597 (58.5)	107 (72.4)	65 (63.9)	^	659 (62)	136 (53.4)	°
Watching a video	670 (50.8)	329 (50.2)	341 (51.4)	^	503 (49.2)	91 (61.5)	60 (58.4)	^	548 (51.6)	121 (47.7)	^
Hearing a talk	532 (40.4)	263 (40.1)	269 (40.6)	^	401 (39.3)	70 (47.3)	49 (47.7)	^	448 (42.1)	84 (33.1)	*
Telephone call	224 (17)	101 (15.4)	124 (18.6)	^	140 (13.7)	52 (35.0)	24 (23.5)	***	188 (17.7)	36 (14.0)	^

Note: Data are omitted for the category of other (Asians and other, n=46 or 3.5% of sampled). \*p<0.05, \*\*p<0.01, \*\*\*p<0.001, °p,05-0.10, ^p>0.10. ~Questions were asked in yes/no format, so individuals may have answered yes to more than one choice. Abbreviations: #NH = non-Hispanic; NA = not asked.





**FIGURE 1** | Summary of preferences of older adults with multimorbidity for learning about clinical trials and trial visits.

or once yearly (9%) exams (Supporting Information: Item 6). Monthly intervals for blood tests or collecting urine were chosen by about half of respondents and 3–4 month intervals by about another one-third. Fifty-six or 4.2% of respondents would not do any tests at any intervals and three quarters of those were individuals who would not consider clinical trials for any conditions listed in Table 2.

#### 4 | Discussion

Older adults are under-represented in clinical trials of medical disorders that are prevalent but not unique to older age [1–7]. Our survey of a nationally representative sample of older adults with multimorbidity found that about half would consider a clinical trial for memory problems, hypertension, cancer, high cholesterol, diabetes, or chronic pain. Hispanic respondents reported willingness to consider clinical trials at rates similar to those of White respondents. BLAfrAm respondents were more likely than White or Hispanic respondents to consider clinical trials for hypertension, diabetes, or high cholesterol. These responses support arguments and data that under-enrollment of older adults or older BLAfrAm or Hispanic people in clinical trials is not because they are unwilling to consider clinical trials [12–16].

Lack of information about or access to clinical trials contributes to the under-representation of older adults and especially BLAfrAm and Hispanic people [15, 16]. Suggestions to reach these groups include educational outreach and dissemination of information about clinical trials at the community level, including pharmacies, senior centers, libraries, religious institutions, as well as hospitals and in homes [9, 16, 17]. In contrast, our nationally representative sample of older adults preferred to learn about clinical trials in physician offices. While the percentages of BLAfrAm and Hispanic respondents that would be willing to learn about clinical trials in religious settings or in senior centers were somewhat higher than in White respondents, it is key that 85% of older BLAfrAm and 94% of older Hispanic adults preferred to learn about clinical trials in physician offices. Hospitals, pharmacies, and libraries were less preferable learning sites.

Written materials were preferred for information about clinical trials in two-thirds of older adults, followed by a question-and-answer session, watching a video, and hearing a talk. A preference for question-and-answer sessions was significantly higher in BLAfrAm respondents than in other groups and by slightly

more BLAfrAm respondents than those preferring written materials. Telephone calls were the least popular method of getting information in all groups. The implications are that written information about clinical trials is universally important, but the opportunity for question-and-answer sessions is also important, especially to older BLAfrAm adults. Combined with our prior analyses showing that physicians have the most influence on decisions regarding clinical trials [10], efforts to increase enrollment of older adults of White, BLAfrAm race, or Hispanic ethnicity into clinical trials would be most effective if focused on physicians caring for these people [18].

Travel is mentioned as an obstacle for research participation of older adults, [3, 4, 10, 16, 19–21] yet our respondents were willing to travel less than 30 min in each direction for monthly (43%) or every 3–4 month visits (another 28%). Women and those >80 years found travel more difficult, but 2/3 were willing to travel if less than 30 min one-way monthly or every 3–4 months. The implication is that it is not transportation per se that is a challenge but longer travel times.

Perhaps surprisingly, fewer participants were willing to have visits or testing of blood or urine at twice or once yearly intervals, during a hypothetical one-year clinical trial of a new medicine. More were willing to have visits and testing at monthly or quarterly intervals. Our findings are supported by recent experience of the ADAPTABLE trial of older adults where planned annual phone follow-up was increased to more frequent follow-up and enrollment of participants in ancillary studies with in-person visits because participants wanted more contact [22].

Clinical trials are increasingly using patient-measured physiological data. Over 90% of survey respondents reported it would be somewhat or very easy to check their blood pressure at home. A similar percentage found it somewhat or very easy to wear an activity monitoring device, with only 14% of the oldest participants finding it difficult or very difficult. These data are in contrast to the one-third of these same respondents that we previously reported had some difficulty connecting to a video visit [10].

#### 4.1 | Limitations

We studied a nationally representative sample of older adults with multimorbidity enrolled in an opinion research panel that

limited the number of annual surveys of each participant, contributing to only 31% of those invited participating in this survey. There were fewer racial or ethnic minority respondents. Racial or ethnic differences may have been underestimated, or responses from individuals with less exposure to surveys or research might differ. Preferences of younger people might also differ.

In summary, our nationally representative survey of older adults with multimorbidity demonstrates their willingness to consider participation in clinical trials for diseases common in older adults, with willingness to consider trials for hypertension, diabetes, and high cholesterol highest in BLAfrAm respondents. All groups wanted to learn about clinical trials from physicians, in physician offices, with question-and-answer sessions and written information. They were willing to consider trials with in-person visits at monthly or 3–4 month intervals and to travel if less than 30 min one-way. The data suggest efforts to increase enrollment of older adults should focus on increasing physician engagement with the dissemination of written information and answering questions about trials. The data also suggest that pragmatic trials with infrequent participant contact are not likely to increase participation in clinical trials in older adults with multimorbidity.

#### Author Contributions

Drs. Janice B. Schwartz, Derjung M. Tarn, John Boscardin, and Ruey-Ying Liu analyzed and interpreted the data, contributed to the study concept and design, and the interpretation of data and preparation of the manuscript.

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#### Disclosure

The sponsor had no role in study design, execution, or analysis. The sponsor did review and approve the final manuscript prior to submission for publication. The contents are those of the author(s) and do not necessarily represent the official views of, nor an endorsement by, FDA/HHS, or the U.S. Government. We acknowledge the contributions of our patient representatives Philip Posner, PhD, and Ting Pun, PhD, as well as Qi Liu, PhD, MStat, Sadhna Khatri, Shiew-mei Huang, PhD, Robert Temple, MD, the late Joseph Grillo, PharmD, and Rajanikanth Madabushi, PhD, for contributions to the study design and survey.

#### Conflicts of Interest

Janice B. Schwartz has received research funding (grants) from the NIH and the FDA and holds stock in Pfizer, Amgen, Inspire Therapeutics, Ingeneron, Medtronic, Edwards, ThermoFisher Inc.; none of which are relevant to this manuscript. Derjung M. Tarn has received grant funding from Bristol Myers Squibb and Pfizer for unrelated investigator-initiated projects. The other authors declare no conflicts of interest.

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### **Supporting Information**

Additional supporting information can be found online in the Supporting Information section.