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An arts program to improve medical student attitudes toward persons with dementia

Daniel R. George PhD, MSc[1] | **Elizabeth Lokon PhD**[2] | **Yue Li PhD**[3] | **Cheryl Dellasega PhD**[1]

[1]Department of Humanities, Penn State College of Medicine, Hershey, Pennsylvania, USA

[2]Scripps Gerontology Center, Miami University, Oxford, Ohio, USA

[3]Discovery Center for Evaluation, Research, and Professional Learning, Miami University, Oxford, Ohio, USA

Correspondence
Elizabeth Lokon, Scripps Gerontology Center, Miami University, 396 Upham Hall, 206A, 100 Bishop Circle, Oxford, OH 45056, USA.
Email: lokonej@miamioh.edu

Arts-based activities may improve medical student attitudes toward persons living with dementia (PLWD) by facilitating relationships around remaining strengths, capacities, and personhood.[1] However, research on co-creation of artwork through evidence-based programs is needed. We evaluated student participation in a standardized, nursing home-based program called Opening Minds through Art (OMA). Since 2007, over 2000 undergraduates have been trained in OMA, with research showing positive impact on students' attitudes toward PLWD.[2,3] Therefore, we hypothesized that medical students would experience increased dementia knowledge, comfort, and "liking" of older adults (i.e., "allophilia") compared to controls.

Six US medical schools—Case Western Reserve University, Marian University, Ohio University, Penn State University, The University of New England, and The University of Toledo—partnered with residential care facilities in four states (IN, ME, OH, PA) throughout 2019–2020. Overall, 52 MS1/MS2 students participated (33 OMA, 19 controls). Nursing homes provided materials/employee time to run the program, and prior to launching OMA, students were given facility overviews and paired with residents. The MS1/MS2 control group completed pre-/post-test questionnaires without OMA/online-training.

OMA students attended 2-h online-training followed by one-on-one engagement with a PLWD. Training included video vignettes/brief quizzes (covering dementia overview, OMA's person-centered philosophy/methodology, and communication skills) aimed at improving students' verbal/non-verbal communication strategies. Subsequently, nursing homes paired OMA students with residents to support creation of visual artworks, including print-making, painting, and collage processes (Figure 1). Number of in-person contact sessions (1–8 visits, $M = 2.85$, SD $= 2.27$) and time spent per session (45–120 min/visit, $M = 87.73$, SD $= 23.56$) varied across sites based on curricular and other limitations. Overall, total time students spent in OMA varied between 90 and 840 min ($M = 260.91$, SD $= 263.30$).

OMA students completed self-evaluations on validated instruments (Dementia Attitudes Scale (DAS), Allophilia Scale, and UCLA Geriatric Attitudes Scale (UCLA-GAS)) before and after sessions, and controls completed the same tests during similar timeframes. ANCOVA was conducted to determine if post-scores were different between OMA students and controls, using pre-score as a covariate variable for each factor and overall measure. Secondly, to assess if OMA affected students differently based on academic year, ANCOVA was conducted to determine post-score difference between MS1s/MS2s, using pre-score as a covariate variable for each factor and overall measure. To assess dosage effect (i.e., if longer OMA involvement was associated with larger attitudinal improvement), ordinary least squares regression model was fit for post-scores using total number of minutes of in-person OMA visits, controlling pre-scores. All statistically significant results were reported at $p < 0.05$, unless otherwise specified.

With respect to participant characteristics, two-tailed χ^2-test results showed no statistically significant

FIGURE 1 (A) Valerie Urban, a first-year student at Penn State College of Medicine, works with her partner at a nursing home in Hershey, PA. She wrote: "It takes time to develop effective communication with each artist by learning to understand the way they personally communicate through the world whether that is through words, facial expressions, touch, or art. I left [OMA sessions] wondering how often our geriatric population has that opportunity to learn something new and receive compliments from their peers? I truly believe encouraging any individual to express themselves through creative works can give them a lasting sense of accomplishment or joy, even if they may not fully remember the experience." (B) Examples of OMA artwork

differences between OMA students and controls vis-à-vis gender, race/ethnicity, and prior experiences interacting with PLWDs. However, significant difference was found in control and OMA participant academic rank. Specifically, a higher percentage of OMA participants were MS1s (73%) than MS2s (27%), whereas more control students were MS2s (58%) than MS1s (42%). OMA and controls were borderline equivalent at baseline for DAS Comfort and Knowledge factor scores, with absolute values of corresponding effect sizes (Hedges' g) being 0.26 and 0.29; and were equivalent for DAS and GAS overall scores, and Allophilia factor and overall scores, with absolute values of effect sizes ranging from 0.01 to 0.24. ANOVA and regression analysis included statistical adjustment for baseline equivalence.

OMA students' scores showed significantly larger pre-post improvement than controls on DAS Comfort factor score, DAS Overall score, and all Allophilia factors and Overall scores. OMA students improved 10%–25% on these scores, compared to −2% to 6% changes for controls. These changes indicated moderate effect sizes of OMA intervention impacts (Partial-η^2 ranging from 0.26 to 0.35). However, ANCOVA did not show statistically significantly different pre-post changes in DAS Knowledge factor and GAS Overall scores by OMA participation status. OMA students reported 5% pre-post changes in DAS Knowledge factor scores and 1% changes in GAS scores, although controls reported 1%/−1% changes.

ANCOVA results showed no significant differences between changes in MS1/MS2s who participated in OMA. Both MS1s/MS2s reported large pre-post improvement in DAS Comfort factor, Overall DAS Scores, all Allophilia factors, and Overall Allophilia scores. Both MS1s/MS2s reported smaller pre-post-changes in DAS Knowledge factor and almost no change in GAS Overall scores. Dosage effect (i.e., total minutes of OMA) was not a significant predictor in any models.

DAS and Allophilia factors and overall scales showed high internal consistency reliabilities using both pre-/post-data, with Cronbach's α values ranging from 0.80 to 0.95. Alternatively, the GAS scale showed relatively lower reliabilities using pre-data (Cronbach's $\alpha = 0.59$) and moderate reliability using post-data (Cronbach's $\alpha = 0.75$) (see statistical analysis data in Tables S1–S5).

Previous research has suggested OMA participation can improve undergrad attitudes toward PLWD.[2,3] This

study shows similar benefits for medical students. That as little as one 90-min structured interaction (plus training) appears sufficient to generate attitudinal change is encouraging, particularly given limited time for volunteer activities in medical school.

Pedagogically, engaging nursing homes to provide arts-based learning experiences for students may foster positive attitudes toward PLWD by enabling playful, creative, humanizing interactions. It appears OMA's standardized curriculum fosters communication/connection, empathy, and insight. It is plausible that experiences like OMA—as well as other evidence-based curricula involving arts[4]—might not only improve attitudes but also encourage students to pursue geriatric specialties.

Study strengths are: use of larger sample size than previous studies, multi-site study population, presence of a control group, and OMA's standardized evidence-based protocol. However, while sample size was larger than other arts-based studies involving PLWD, it remains relatively small. Moreover, due to logistical considerations at each school OMA "dosage" differed and students, perhaps influenced by selection bias, were not uniformly in the same stage of training. And while positive outcomes were found, it is unclear whether specific geriatric education interventions have long-lasting effects on knowledge, skills, and attitudes of students. Lastly, we did not observe significant changes in dementia attitude on UCLA-GAS.

Future work should track career choices for medical students who participate in OMA as well as long-lasting effects on knowledge/skills/attitudes toward PLWD and systems of care. Researchers can determine what stage of training is most efficacious for OMA exposure, and evaluate how timing of OMA may enhance students' capacity to work with PLWD during clinical immersions. Perceptions that PLWD and care staff have toward students, and student attitudinal change over time also merits study.

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CONFLICT OF INTEREST

Elizabeth Lokon is the founder and director of Opening Minds through Art at Scripps Gerontology Center, Miami (OH) University. She has no financial stakes in this study. The authors report no conflict of interest.

AUTHOR CONTRIBUTIONS

Each author has made substantial contributions to (1) conception and design of study, acquisition of data, and analysis and interpretation of data, and (2) drafting the article or revising it critically for important intellectual content.

SPONSOR'S ROLE

None.

ETHICS STATEMENT

IRB approval: Ethics approval was obtained from institutional review boards at Miami University (Protocol ID No. 0005r updated to No. 01900r).

ORCID

Daniel R. George https://orcid.org/0000-0002-6153-6648
Yue Li https://orcid.org/0000-0002-0508-6451

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

Appendix S1: Statistical analysis data.

Table S1: Participants' demographic information.

Table S2: ANCOVA results for comparing pre-post changes by OMA participation status.

Table S3: ANCOVA results for comparing pre-post changes by years in medical school.
Table S4: Regression results for post factor and overall scores on pre scores and dosage (total minutes of OMA visit).
Table S5: Internal consistency reliabilities for pre- and post-measures.

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