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Andrea Brudigan
University of Nebraska Medical Center

Laurie Sewell-Muller
University of Nebraska Medical Center

Kokuvi Sena Tsogbevi
University of Nebraska Medical Center

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**The Usability and Feasibility of a Nursing Evidence-Based Comorbidity Educational
Website for an Urban Mental Health Assertive Community Treatment (ACT) Program**

Authors: Laurie Sewell-Muller, BSN, RN, Andrea Brudigan, MSN, RN, Kokuvi Sena Tsogbevi,
BSN, RN

Myra Schmaderer, PhD, RN
Assistant Professor, University of Nebraska Medical Center, College of Nursing

Paula Schulz, PhD, RN
Associate Professor Emeriti, University of Nebraska Medical Center, College of Nursing

Complete mailing address:

UNMC College of Nursing
985330 Nebraska Medical Center
4111 Dewey Avenue
Omaha, NE 68198-5330

Business Phone: 402.559.4000

Email: laurie.sewellmuller@unmc.edu

andrea.brudigan@unmc.edu

kokuvi.tsogbevi@unmc.edu

mschmade@unmc.edu

pschulz@unmc.edu

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**The Usability and Feasibility of a Nursing Evidence-Based Comorbidity Educational Website for an Urban Mental Health Assertive Community Treatment (ACT) Program
Abstract**

Objective: Serious mental illness (SMI) causes an increased risk for comorbidities like heart disease, obesity, metabolic syndrome, and diabetes. Many times, these comorbidities are due to side effects of antipsychotics and poor self-management from low insight and other symptoms of mental illness. This project aims to enhance client care enrolled in an Assertive Community Treatment (ACT) program by providing evidence-based resources tailored to clients with SMI, providing ACT team members with support to promote healthy behaviors in clients. **Methods:** A website was developed that provides printable, easy-to-read, evidence-based resources that address physical comorbidities. The ACT team integrated these resources into its workflow for 12 weeks. Pertinent client health data was collected before and after 12 weeks. Usability and feasibility were measured by post-surveys assessing staff's use and views of the website. Feasibility was also measured by weekly tallies by staff, showing how often resources were used and which topics were addressed. Website traffic data was collected. **Results:** The website provided the ACT team with a central location for evidence-based resources. During the study, 16 (72%) of 22 clients improved or maintained their weight, and an average of 15 (88%) of 17 clients had improved or maintained their blood pressure. Post surveys of ACT team members indicated helpfulness and usability of the website with six (100%) of six staff giving positive remarks. **Conclusions:** There is a need for accessible evidence-based resources for interdisciplinary teams that address physical comorbidities to improve outcomes for SMI populations, along with increasing team efficiency and satisfaction.

Keywords: Psychiatric Nursing, Nursing Education, Mental Disorders, Metabolic Syndrome, Community Mental Health Services, Antipsychotic Medication

Introduction

Individuals with serious mental illness (SMI) have an increased risk for physical comorbidities such as heart disease, obesity, metabolic syndrome, and diabetes that need continuous monitoring and management (Bozymski et al., 2018). A systematic review reports that 68% of individuals with a mental illness have a medical condition (Druss & Walker, 2011). Comorbidities are due to several factors, including antipsychotic medication side effects, poor self-management due to a lack of insight, and other debilitating symptoms of mental illness. These comorbidities result in the early deaths of many. Mortality data from multiple states found that those with mental illness die 25 years earlier than the general population and are less likely to seek preventative health care (Druss & Walker, 2011). This vulnerable population can have extreme difficulty with day-to-day activities and may practice unhealthy coping mechanisms that are detrimental to physical health. Druss and Walker (2011) identified four modifiable health practices which correlate to high rates of comorbidity and early death: smoking, excessive use of alcohol, lack of physical activity, and poor nutrition. There are also non-modifiable risk factors, like antipsychotic use, which are known to increase the risk of metabolic syndrome, a significant cause of death in individuals with schizophrenia (Hebrani et al., 2015).

An integrative nursing approach is one way to provide simultaneous mental and physical health management. Comorbidity education provided by Assertive Community Treatment (ACT) teams is vital for chronically ill clients to manage physical health. ACT is an evidence-based community treatment program instituted to provide psychiatric and rehabilitation services to clients with SMI. Quality of physical health can have an impact on mental well-being and overall quality of life. Burns et al. (2018) noted that barriers to improving health include literacy issues and problems with logical thought processing in the SMI population. ACT Registered nurses

(RNs) are in a unique position to educate clients and interdisciplinary team members about evidence-based practices and resources.

This DNP (Doctor of Nursing Practice) student capstone project aims to enhance comorbidity client education in an ACT team while also improving work satisfaction and efficiency. The purpose of this project is to determine if a developed website with evidence-based educational resources, tailored for clients with SMI, can provide RNs and other staff with support to promote healthy behaviors in clients.

Aim. Evaluate the usability and feasibility of a student-developed comorbidity educational website measured by the (a) documentation of the use of the website resources (b) acceptability of the training/intervention, (c) assessment of staff role satisfaction, usability, and effectiveness of intervention with pre and post staff surveys, and (d) changes in Electronic Health Records (EHR) data including client metabolic parameters (BP, BMI, and waist circumference).

Methodology

This project is a one-group pre-post design. Evaluation of the project included process and outcome evaluation to monitor the usability and feasibility of the project. Institutional Review Board approval was not required due to the absence of face-to-face contact with clients and because no identifying client information was collected.

Subjects included five mental health RNs and six other interdisciplinary team members, including the team leader, therapists, and specialists in rehabilitation, vocation, peer support, and substance use currently employed on the ACT team. De-identified client health measurement data was collected from the IT (Information Technology) team during pre- and post-intervention to obtain a convenience sample of medical records of clients seeking treatment from the ACT

program. This data was collected to assess demographics and selected measures of physical health status. Exclusion criteria include ACT clients that are children, adolescents, and inpatient clients.

The project was conducted with an ACT program at a metropolitan non-for-profit outpatient community mental health center located in the Midwest. The ACT program cares for an average of 85-110 SMI clients. RN home visits to clients in the community are available as needed, and RNs are available in the ACT clinic Monday-Friday 8:00 am - 4:30 pm.

The DNP students met with and shadowed the ACT team to investigate current concerns, areas of possible improvement, current barriers, and workflow practices. This project addresses a lack of physical comorbidity education for clients due to limited time and resources. Physical comorbidity education material was developed from evidence-based practices and tailored to those with SMI in a website developed by DNP students for the ACT team. The website includes up-to-date, easily accessible, evidence-based resources and printouts on metabolic syndrome and psychotropic medications, nutrition, exercise, daily comorbidity management, and resources on motivational interviewing (MI), SMART goals, and Satisfaction with Life Scale.

An educational session with the ACT team to introduce the website, along with a pre-intervention survey to assess staff views on client education needs, availability of comorbidity education resources, current use of comorbidity education, and role satisfaction regarding helping clients with physical comorbidities was held. Acceptability was assessed using the Training Acceptability Rating Scale (TARS-1) and was administered to ACT staff following the education session. The ACT team was asked to utilize and record usage of the website with clients for 12 weeks, from April 2021 through June 2021. Pre-determined and de-identified client

health measurements and demographic data were collected prior to and after the implementation of the website.

Weekly Tally Sheets & Website Traffic Data. Tally sheets were used to document the health topic and how often staff offered educational resources or comorbidity teaching to clients. For completing a weekly tally sheet, staff were entered into a weekly drawing for a \$5 coffee gift card. The authors also accessed and assessed the website traffic data.

TARS-1/TARS-2. The first section TARS-1 (Questions 1-6, Score 1-36) assessed how ACT staff accepted the educational website, and the second section, TARS-2 (Questions 7-15, Score 0-27), evaluates how the teaching process and its outcomes impacted the staff's impressions (Grundy et al., 2017). This tool shows repetitive concurrent validity (Carpenter, Milne, Lombardo, & Dickinson, 2007).

Pre/Post-Intervention Surveys. The self-developed pre-survey evaluated the current practices of comorbidity education, current needs regarding implementation, available comorbidity education resources, and role satisfaction related to educating clients in preventing or improving physical health comorbidities. The post-survey included several questions from the pre-survey to assess current education practices with clients, resource availability, and role satisfaction. Additionally, the post-survey assessed the staff's view of the website including its ease of use, utility, perceived benefits, streamlining into current practice, areas of improvement, intended future use, assessment of use in improving nursing efficiency, and the estimated time saved for other tasks.

Results

Tally sheet data reflected a significant increase in comorbidity education. Over 12-weeks, staff responses indicated the use of the website for education with clients about antipsychotic

medication (14 times), diabetes (9 times), hypertension (18 times), obesity (17 times), hyperlipidemia (once), physical education (36 times), nutrition (42 times), general disease education (12 times), and smoking cessation (12 times). These responses indicate a significant increase in client education compared to pre-survey data from the week prior to the start of the website implementation.

Three staff completed the TARS-1. Post-intervention, six staff completed the TARS-2. Due to the anonymity, it is unknown if the same individuals completed both TARS-1 and TARS-2. The mean score of TARS 1 was 25/36 (70%), with scores of 70–80% being satisfactory. The mean score of TARS 2 results, was 22/27 (81%) with 80% and above scores, suggesting exceptional acceptance for the training.

The pre-survey responses suggest that none (0%) of the staff offered obesity, diabetes, hypertension, or hyperlipidemia education in the prior week, one staff member (33%) offered smoking cessation education, and two staff (67%) offered nutrition education. However, staff indicated a high need for more client education from staff about physical comorbidities, with ratings of 8-10 (0-10 scale, 10 being the highest need). Staff responses indicated a lack of available evidence-based resources to help them educate clients, with responses of 2-5 (scale of 0-10, with 10 being plenty of resources). The RNs indicated only a low to moderate level of role satisfaction due to helping or educating to prevent or improve physical comorbidities, with ratings of 1-5 (0-10 scale, 10 being the highest satisfaction).

Post-survey responses suggest that the website was moderate to extremely useful with ratings of 6-9 (0-10 scale, with 10 being extremely useful) and noted an increase of evidence-based resources with the website, with responses of 6-8 (0-10 scale, 10 being plenty of resources). Role satisfaction increased significantly with staff indicating mostly high satisfaction

with helping or educating clients about preventing and improving comorbidities, with staff responses of 7-10, (0-10 scale, with 10 being the highest satisfaction). Moreover, 100% of staff indicated the website was helpful, improved the quality of life for clients, increased safety, and efficiency. The team also rated the website as moderately-extremely easy to use with ratings of 7-10, (0-10 scale, 10 being extremely easy to use). The RNs plan to use the website about twice/week and the others 2-3 times/week.

Common themes from the post-survey include website helpfulness, ease of use, the potential of in-person group education, continued barriers, efficiency, and time for education. Multiple staff mentioned the website as a helpful conversation starter, as one staff explained, "It helps to start conversations and gives people something tangible to use on their own." Others commented on the usefulness of the handouts and time efficiency. Another staff concluded, "With prolonged use, it should...help shift from reactive to proactive." One barrier mentioned was the lack of client follow-through. Some staff agreed that the website increases efficiency in education and one staff commented that an app would be helpful.

Pre-intervention data were collected on (n= 74) clients and post-intervention data were collected on (n=69) clients (45 identified as male and 24 identified as female), due to program discharges. Client ages ranged from 20-78 years and met diagnostic criteria for one of the following chronic mental health disorders: schizophrenia, schizoaffective disorder, bipolar disorder, and major depressive disorder with psychotic features. Of the initial 74 clients, 70 (95%) were currently taking one or more antipsychotic medications, 27 (36%) were taking one or more medications for dyslipidemia, 14 (19%) were taking one or more medications for type II diabetes, and 26 (35%) were taking one or more medications for hypertension. Waist circumference was documented on eight clients, five of which were in an unhealthy range.

Height measurements were not available; therefore, BMI calculations could not be determined. During the study, 16 (72%) of 22 clients improved or maintained weight, and an average of 15 (88%) of 17 clients improved or maintained blood pressure (BP).

Discussion

Available literature shows that lifestyle modification can impact various health measures in the SMI population (Pendlebury, & Holt, 2008; Singh, et al., 2018; Wong-Anuchit, 2017). One source recommends that education should be introduced when antipsychotics are initiated (Álvarez-Jiménez et al. 2008). Our results suggest that management of weight can improve from education during treatment, as (72%) of 22 clients improved or maintained weight during this project. Other studies show added health benefits (such as weight management) by combining physical activity and lifestyle changes over an extended period, such as 16 weeks (Weber & Wyne 2006), 18 weeks (Richardson et al. 2005), six months (Chen et al. 2009), and 18 months (Poulin et al. 2007). Therefore, future studies may show increased benefits if routine physical activity is coupled with education. One computer-delivered intervention, about lifestyle changes, led to 59% of clients improving BP (Kreyenbuhl et al., 2017). In this project, 15 (88%) of 17 clients improved or maintained BP post-intervention. Additional studies should assess the effect of in-person versus computer-based education.

The weekly tally sheets and website traffic data show utilization of the website over 12 weeks and post-project website traffic data suggests continued use with 49 visits since the conclusion of the project. The TARS and pre-survey results suggest a modest level of staff satisfaction and post-survey results suggested website effectiveness. Staff indicated no comorbidity education in the week prior to the intervention, compared to 100% participation in at least one area of education during the project intervention. These results are consistent with

similar training (Sibeko et al., 2018). Our data suggests that by supporting staff with user-friendly and easily accessible evidence-based resources, there is an increased implementation of client education on nutrition, weight management, smoking cessation, and exercise.

Implementing consistent comorbidity education may improve client outcomes and satisfaction as well as the satisfaction of mental health staff.

Project limitations were due to the impact of the COVID-19 pandemic, staff turnover, lack of prior research on this topic, and logistics in accessing client data. Only one RN was present for the entirety of the intervention and the sample size was small.

These authors recommend further research into providing evidence-based educational resources about common comorbidities for ACT teams working with individuals with SMIs. This vulnerable population would benefit from future studies, like this one, to further investigate the current and growing needs of community mental health nursing. Research that follows clients for longer would be beneficial in understanding more fully the physical benefits of increased comorbidity education. Initiating and implementing individual and group educational sessions to reinforce learning and improve client outcomes is also recommended based on RN suggestions from this project.

Implications for mental health nursing include the need for the continued advancement of physical health comorbidity knowledge for RNs and other mental health staff and increasing supportive and accessible evidence-based resources to improve work satisfaction, efficiency, and effectiveness. Mental health nursing is needed more than ever and continuing to support and advance this role will have multi-factorial benefits across the healthcare system.

References

- Alvarez-Jiménez, M., González-Blanch, C., Crespo-Facorro, B., Hetrick, S., Rodríguez-Sánchez, J. M., Pérez-Iglesias, R., & Vázquez-Barquero, J. L. (2008). Antipsychotic-induced weight gain in chronic and first-episode psychotic disorders: a systematic critical reappraisal. *CNS drugs*, 22(7), 547–562. <https://doi.org/10.2165/00023210-200822070-00002>
- Bozymski, K. M., Whitten, J. A., Blair, M. E., Overley, A. M., & Ott, C. A. (2018). Monitoring and Treating Metabolic Abnormalities in Patients with Early Psychosis Initiated on Antipsychotic Medications. *Community Mental Health Journal*, 54(6), 717–724. <https://doi-org.library1.unmc.edu/10.1007/s10597-017-0203-y>
- Burns, A., Webb, M., Stynes, G., O'Brien, T., Rohde, D., Strawbridge, J., Clancy, L., & Doyle, F. (2018). Implementation of a quit smoking program in community adult mental health services—a qualitative study. *Frontiers in Psychiatry*, 9. <https://doi-org.library1.unmc.edu/10.3389/fpsyt.2018.00670>
- Carpenter, J., Milne, D., Lombardo, C., & Dickinson, C. (2007). Process and outcomes of training in psychosocial interventions in mental health: A stepwise approach to evaluation. *Journal of Mental Health*, 16(4), 505–520. <https://doi-org.library1.unmc.edu/10.1080/09638230701482329>
- Chen, H., Cohen, P., Crawford, T. N., Kasen, S., Guan, B., & Gordon, K. (2009). Impact of early adolescent psychiatric and personality disorder on long-term physical health: a 20-year longitudinal follow-up study. *Psychological medicine*, 39(5), 865–874. <https://doi.org/10.1017/S0033291708004182>
- Druss, G. Benjamin & Elizabeth Reisinger Walker. (2011). *Mental Disorders and Medical*

Comorbidity. The Synthesis Project, Research Synthesis Report.

Grundy, A. C., Walker, L., Meade, O., Fraser, C., Cree, L., Bee, P., Lovell, K., & Callaghan, P. (2017).

Evaluation of a co-delivered training package for community mental health professionals on service user- and career-involved care planning. *Journal of Psychiatric and Mental Health Nursing*, 24(6), 358–366. <https://doi-org.library1.unmc.edu/10.1111/jpm.12378>

Hebrani, P., Manteghi, A. A., Behdani, F., Hessami, E., Rezayat, K. A., Marvast, M. N., &

Rezayat, A. A. (2015). A double-blind, randomized, clinical trial of metformin as an add-on treatment with clozapine in the treatment of schizophrenia disorder. *Journal of Research In Medical Sciences: The Official Journal Of Isfahan University Of Medical Sciences*, 20(4), 364–371. Retrieved from

<http://search.ebscohost.com.library1.unmc.edu:2048/login.aspx?direct=true&db=cmedm∓AN=26109992&login.asp&site=ehost-live&scope=sit>

Kreyenbuhl, J., Dixon, L. B., Brown, C. H., Medoff, D. R., Klingaman, E. A., Fang, L. J., Tapscott, S.,

& Walsh, M. B. (2017). A Randomized Controlled Trial of a Patient-Centered Approach to Improve Screening for the Metabolic Side Effects of Antipsychotic Medications. *Community mental health journal*, 53(2), 163–175. <https://doi.org/10.1007/s10597-016-0007-5>

Pendlebury, J., & Holt, R. I. G. (2008). Supporting the lifestyle modification and treatment of type 2

diabetes for people with severe mental illness. *European Diabetes Nursing*, 5(2), 58–63.

<https://doi.org/10.1002/edn.110>

Poulin, M. J., Chaput, J. P., Simard, V., Vincent, P., Bernier, J., Gauthier, Y., Lanctôt, G., Saindon, J.,

Vincent, A., Gagnon, S., & Tremblay, A. (2007). Management of antipsychotic-induced weight

gain: prospective naturalistic study of the effectiveness of a supervised exercise programme. *The Australian and New Zealand journal of psychiatry*, 41(12), 980–989.

<https://doi.org/10.1080/00048670701689428>

Richardson, C. R., Avripas, S. A., Neal, D. L., & Marcus, S. M. (2005). Increasing lifestyle physical activity in patients with depression or other serious mental illness. *Journal of psychiatric practice*, 11(6), 379–388. <https://doi.org/10.1097/00131746-200511000-00004>

Sibeko, G., Milligan, P. D., Roelofse, M., Molefe, L., Jonker, D., Ipser, J., Lund, C., & Stein, D. J. (2018). Piloting a mental health training programme for community health workers in South Africa: An exploration of changes in knowledge, confidence and attitudes. *BMC Psychiatry*, 18. <https://doi.org/10.1186/s12888-018-1772-1>

Singh, V. K., Karmani, S., Malo, P. K., Virupaksha, H. G., Muralidhar, D., Venkatasubramanian, G., & Muralidharan, K. (2018). Impact of lifestyle modification on some components of metabolic syndrome in persons with severe mental disorders: A meta-analysis. *Schizophrenia Research*, 202, 17–25. <https://doi.org/10.1016/j.schres.2018.06.066>

Weber, M., & Wyne, K. (2006). A cognitive/behavioral group intervention for weight loss in patients treated with atypical antipsychotics. *Schizophrenia research*, 83(1), 95–101. <https://doi.org/10.1016/j.schres.2006.01.008>

Wong-Anuchit, C. (2017). Mental illness and health behavior change [ProQuest Information & Learning]. In *Dissertation Abstracts International: Section B: The Sciences and Engineering* (Vol. 78, Issue 2–B(E)).