Research

Women's Health Topics in Dental Hygiene Curricula

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Abstract

Purpose: Minimal inclusion of women's health topics in dental and dental hygiene curricula may not prepare dental health care workers to provide comprehensive health care to females. The purposes of these surveys in 2001 and 2007 were to investigate United States dental hygiene school curricula regarding inclusion of women's health topics in differing degree programs (associate/certificate, baccalaureate , associate/baccalaureate) and course status (required or elective). The surveys also identified sources used to obtain women's health topics, assessed faculty continuing education participation in women's health, determined satisfaction with current curricula, questioned if change was anticipated and if so in what topics, identified where students apply their knowledge about women's health and in what ways and reported progress of dental hygiene curricula over the 6 year time period.

Methods: Surveys were sent to dental hygiene program directors in 2001 (N=256) and in 2007 (N=288) asking them to complete the questionnaire.

Results: There was no statistically significant association between 2001 and 2007 survey results by degree or program setting. The educational issue, women's general health continuing education courses/topics completed by dental hygiene faculty in the past 2 years, showed a statistically significant difference during that time interval. No statistically significant difference existed between the survey years regarding topics on women's general health and oral health. Regardless of statistical significance, further details investigated percentage differences that may reveal relevant issues.

Conclusions: These surveys establish a baseline of women's health topics included in dental hygiene curricula in order to assess knowledge of dental hygienists in practice.

Key Words: women's general and oral health topics, dental hygiene curricula

This study supports the NDHRA priority area, Professional Education and Development: Evaluate the extent to which current dental hygiene curricula prepare dental hygienists to meet the increasingly complex oral health needs of the public.

Introduction

Women make up approximately 51 percent of the United States' population, and the majority are between ages of 26 to 44 years old (30%) and 65 years or greater (28%). Females in the United States have a life expectancy ranging from 74 to 79 years. Approximately 13% live in poverty and 33% of the 13% living in rural America are more likely to be medically uninsured.[1,2] Are health care providers prepared to treat the unique needs of women?

Historically, women's health topics were minimally included in medical, dental and nursing curricula. In the 1990s, federal legislators passed laws and appropriated monies to support change in women's health issues.[3] As a result the medical, dental and nursing educational curricula were investigated and deficiencies were identified and modified to more comprehensively include women's general and oral health topics in educational programs.[4]

Minimal research explores the scope of women's health issues included in dental hygiene curricula. As a result, there is no framework to assess the need to alter existing curricula, treatment protocols, and/or research agenda initiatives in dental hygiene education. Therefore, the purposes of these surveys in 2001 and 2007 were to investigate United States dental hygiene school curricula about inclusion of women's health topics in differing degree programs (associate/certificate, baccalaureate) and to report teaching resources. Demographic data about the degree granted and program location within an institution is included.

Review of the Literature

In 1983, the United States government established a Public Health Service Task Force on Women's Health Issues, which recommended biomedical and behavioral research be expanded to ensure emphasis on women of all ages.[3] In the 1990s, the Women's Health Equity Act provided the stage for improved women's health care into the 21st century. This bill stated that "American women shall no longer tolerate the neglect of their health care needs."[5] As a result, agencies were directed to work

together to determine the extent to which women's health issues were addressed in medical curricula and identify means to initiate a comprehensive plan to address women's health.

In 1995, the Association of American Medical Colleges (AAMC),[6] working with the Health Resources and Service Administration (HRSA), the Public Health Service's (PHS) Office on Women's Health (OWH) and the National Institute of Health Office of Research of Women's Research (NIH ORWH), conducted a survey of United States and Canadian medical schools to assess women's health topics included in medical curricula. In 1997/1998, the American Dental Education Association (ADEA),[4] in conjunction with the NIH and HRSA, conducted a similar survey of the United States and Canadian dental schools. In 1999, the American Association of Colleges of Nursing (AACN)[7] conducted a survey of the United States entry–level baccalaureate degree nursing schools/programs to identify women's health topics in their curricula. Areas of deficiencies were identified and curricula was enhanced and expanded to strengthen the scope and depth of courses included in health care professionals' education.[4,6,7]

In Dr. David Satcher's *Oral Health in America: A Report of the Surgeon General*, he stated: "We know the mouth reflects general health and well–being."[8] This statement verified that government officials in health care recognized the synergistic impact of oral health/disease on total body health/disease. Satcher urged curricular revisions incorporate this message in health professionals' education. He also recommended this be a framework to integrate oral health into overall general health care in America.[8]

As the United State's population multiplies and people live longer, the demand for health care services alter and increase. In 2001, ADEA's President Pam Zarkowski stated: "The public will look to our institutions to prepare oral health care providers who recognize unmet needs and are competent in addressing those needs."[9] It is incumbent on educators to ensure competency of oral health care providers to provide appropriate services to people of varying ages, genders, cultures, socioeconomic and educational levels.

Upon review of the dental hygiene literature, a formal study of curricula had not been completed comparable to the medical, dental and nursing professions. One study by Murray and Fried in 1999 identified the need to investigate how knowledge of women's health issues by dental hygienists can be improved.[10] This study randomly selected Connecticut dental hygienists and asked about their knowledge level of effects of menopause on the general and oral health of female patients.[10] With a 56% response rate, the project investigated the influence of the degree level and the resultant knowledge scores. Results revealed that dental hygienists of menopausal and post–menopausal ages had a slightly higher general knowledge of menopause but reported less knowledge of oral effects of menopause than the pre– and perimenopausal respondents.[10] Seventy–one percent of the dental hygienists had completed 1 or more college courses that discussed menopause and scored high in both oral and general effects.[10] The degree earned was most influential in establishing a significant difference in their knowledge level.[10] The baccalaureate degree dental hygiene graduate had more knowledge about the oral effects than those who had earned an associate degree.[10] The authors suggested a national survey of dental hygiene programs be conducted to determine what women's health topics are included in curricula.[10]

Methodology

The investigator developed a 2 part survey – part 1 consisted of 13 questions and part 2 included 20 women's health topics in general and oral health. Assistance in refining the survey was obtained from 4 reviewers within the investigator's home institution and 10 external dental hygiene program directors. Suggestions from reviewers were incorporated to assist in clarification and readability of the survey. This project was approved by the West Virginia University Institutional Review Board, May 4, 2001, and the Ohio State University Institutional Review Board, March 12, 2007. This survey modeled the previously discussed medical, dental and nursing surveys originally developed by the Task Force members of the AAMC,[6] the National Institute of Nursing Research (NINR)[7] and the American Dental Education Association (ADEA).[4] The AAMC and ADEA Task Force members, with the NIH, had scrutinized survey content and construct validity to determine its measurement accuracy.[11]

A mailing list for dental hygiene schools was obtained from the American Dental Hygienists' Association (ADHA) in the respective study years. A cover letter explaining the purpose of the survey was mailed to program directors. The letter also informed program directors that completing the survey was voluntary and there was no incentive to participate.

In 2001, surveys were mailed to 256 entry–level dental hygiene program directors in the United States. In 2007, surveys were mailed to 288 entry–level dental hygiene program directors in the United States.

Section 1 questions included: demographics, sources of instructional materials, faculty participation in women's health, continuing education courses, where and how dental hygiene students apply their knowledge of women's health topics and satisfaction and perceptions regarding women's general and oral health topics in the curricula. In section 1, respondents were asked to mark 1 response for questions 1 and 2 and mark all that apply to questions 3, 4 and 5. Results of survey questions 6

and 7 were not included in this paper. Section I data was analyzed using the Overdispersed Poisson regression (negative binomial regression) for count and Fisher's exact test for percents using the JMP In statistical program.[12]

Section 2 questions consisted of 20 women's general and oral health topics appropriate to include in dental hygiene curricula. Directors were asked to respond according to topic, degree granted and if the topic was included in a required or elective course. Section II data was analyzed using Fisher's exact test by the JMP In statistical program.[12] Fisher's exact test was used to investigate if significant differences existed. P–values<.05 were determined to be significant. Throughout this paper, topic frequencies are reported in percent of those who responded to the questionnaire. Masters' degree program data was not included due to the small number of programs/director respondents. Not all respondents answered all questions or topics.

2001 Section I Survey Results: Of the 256 survey mailings in 2001, there was a total response of 62.1% (159/256). Not all participants responded to all questions and topics. Since the majority of dental hygiene programs in the United States are associate degree/certificate and located in technical/community based colleges, the highest percent responses from both surveys were directors of associate degree/certificate programs located in technical/community college setting (tables 1 and 2). This does not equal 100%t because an institution may have 1 or more degree programs.

In 2001, directors reported using more traditional sources than internet sources to obtain information about women's health topics. The most frequently reported traditional sources were dental hygiene and dental texts/journals, the 2000 United States Surgeon General's Oral Health Report and continuing education materials (table 3). The most frequently reported internet sources were www.perio.org, www.cdc.org and www.nidcr.nih.gov (table 4).

Using a count mean, faculty have completed slightly more women's general health topics (2.42, p–value=0.004) than oral health continuing education courses (2.08, p–value=0.114) in the past 2 years. Women's general health topics completed most frequently were domestic violence issues, menopausal health and heart disease. Topics completed most frequently regarding women's oral health were periodontal/gingival health and disease, effects of hormones on gingival/periodontal health and effects of bulimia and anorexia (eating disorders) on oral/dental health. Approximately 1/3 of directors reported faculty not completing continuing education courses in these areas in the past 2 years.

2001 Section II Survey Results: Section II of the survey listed 20 women's general and oral health topics that may be included in program curricula. Directors were asked to identify the degree program (associate/certificate, baccalaureate or associate/baccalaureate) and the course status (required, elective or not included) of each topic. Due to small numbers, the statistician suggested reporting only associate/certificate or baccalaureate degree programs and required courses.

Associate/certificate program directors (69.8%, 111/159) reported all 20 women's general and oral health topics were included in programs' required courses. Baccalaureate degree program directors (10.69%, 17/159) reported all 20 topics were included in programs' required courses.

Women's general health topics most included in associate degree programs' required courses included: HIV/AIDs, cardiovascular, hypertension and stroke, use/abuse and cessation of tobacco, alcohol, prescription and other addictive substances. Gen-

Table 1: Women's Health Topics in Dental Hygiene Curricula 2001 and 2007 Survey Demographics by Degree Granted

Degree 2001 n = 159 2007 n= 73	2001	2007	p–value 0.05
Associate/Certificate	69.8% 111/159	71.23% 52/73	0.818
Baccalaureate	10.69% 17/159	12.32% 9/73	0.818
Associate/Baccalaureate	6.91% 11/159	9.58% 7/73	0.818

Table 2: Women's Health Topics in Dental Hygiene Curricula 2001 and 2007 Survey Demographics by Institution

Institution 2001 n = 159 2007 n= 73	2001	2007	p–value 0.05
Technical/Community College	56.60% 90/159	67.12% 49/73	0.638
University not affiliated with a dental school	19.49% 31/159	16.43% 12/73	0.638
University affiliated with a dental school	8.80% 14/159	8.21% 6/73	0.638

eral and oral related topics concerning women included: eating disorders/behaviors, puberty, pregnancy, perimenopause, menopause and postmenopause and autoimmune diseases. Women's oral health topics included: gingivitis and periodontal disease, xerostomia, oral candidiasis and dental caries.

The most included women's general health topics in required courses of baccalaureate programs included diabetes, cardiovascular, hypertension and stroke, anemia and use/abuse and cessation of tobacco, alcohol, prescription and other addictive substances. General and oral health related topics most included were puberty, pregnancy, perimenopause, menopause and postmenopause, eating disorders/behaviors and autoimmune diseases. The most included women's oral health topics in baccalaureate degree programs' required courses were gingivitis and periodontal disease, oral candidiasis, oral cancer and xerostomia. The topic least included in required courses of both degree programs was lung, ovarian, breast, uterine and cervical cancers.

2007 Section I Survey Results: Of the 288 survey mailings in 2007, the response rate was 25.34% (73/288). Not all participants responded to all questions and topics. Since the majority of dental hygiene programs in the United States are associate degree/certificate and in technical/community colleges, the highest percent responses from both surveys were directors of associate degree/certificate programs located in technical/community colleges (table 1 and 2). They do not equal 100% because an institution may have 1 or more degree programs.

In 2007, directors report faculty use of more internet sources than traditional sources to obtain information about women's health topics. Traditional sources cited most frequently included: dental hygiene and dental texts/journals, Healthy People 2000 and 2010 Report, the 2000 United States Surgeon General's Oral Health Report and continuing education courses (table 3). The most frequently cited internet sources were www.perio.org, www.cdc.gov. and www.nidcr.nih.gov (table 4).

Using a count mean, faculty has completed more women's general health topics (3.37, p–value=0.004) than oral health continuing education courses (2.44, p–value=0.144) in the past 2 years. Topics most frequently completed regarding women's general health issues were menopausal health, heart disease and domestic violence issues. Women's oral health topics most frequently completed were periodontal/gingival health/disease, effects of hormones on gingival/periodontal health and oral effects of pharmacological agents on women. Directors reported that approximately 20% of faculty had

Table 3: Traditional Sources of Instructional Materials used by Faculty to Teach Women's General and/or Oral Health Topics in the Dental Hygiene Curriculum

Traditional Sources	2001 62.1% (159/256)	2007 25.34% (73/288)
Dental hygiene and dental texts/journals	141	69
2000 U.S. Surgeon General's Oral health Report	78	31
Continuing Education Course Materials	66	27
Healthy People 2000 and/or 2010 Report	62	36
Basic Science texts/journals	61	18
Medical and nursing texts/journals	46	15
Newsletters/newspapers	39	13
Women's/women's health journals	25	16

Table 4: Internet Sources of Instructional Materials Used by Faculty to Teach Women's General and/or Oral Health Topics in the Dental Hygiene Curriculum

Internet Sources	2001 62.1% (159/256)	2007 25.34% (73/288)
www.perio.org	85	40
www.cdc.gov	48	34
www.nidcr.nih.gov	21	14
www.womens–health.org	18	8
www.niaid.nih.gov/publications.womenshealth	18	12
www4.od.nih.gov/orwh	8	5
www.4women.org	7	5
www.hrsa.gov.womenshealth	5	5
www.healthywomen.org	5	3
www.nurseworld.org.mods	3	3

not completed continuing education courses in these areas in the past 2 years.

A statistically significant difference was identified in the count mean of faculty taking continuing education courses in women's general health topics when comparing 2001 and 2007. The mean was 2.42 in 2001 and 3.37 in 2007 (p–value=0.004).

2007 Section II Survey Results: Section II of the survey listed 20 women's general and oral health topics that may be included in program curricula. Directors were asked to identify the degree program (associate/certificate, baccalaureate or associate/baccalaureate) and the course status (required, elective or not included) of each topic. Due to small numbers, the statistician suggested reporting only associate/certificate or baccalaureate degree programs and required courses.

Responding associate/certificate program directors (71.2%, 52/73) and baccalaureate program directors (12.32%, 9/73) reported that all women's health topics listed in this survey are included in required courses.

The most included women's general health topics in required courses in associate/certificate programs were HIV/AIDs, use/abuse and cessation of tobacco, alcohol, prescription and other addictive substances (substance abuse) and cardiovascular, hypertension and stroke and diabetes. Women's general and oral related health topics most included were eating disorders/behavior, puberty, pregnancy, perimenopause, menopause and postmenopause, autoimmune diseases and osteoporosis, osteopenia and osteoarthritis. Women's oral health topics most included were: gingivitis and periodontal disease, dental caries, xerostomia and oral candidiasis.

The most included women's general health topics in required courses of baccalaureate degree programs were respiratory diseases, diabetes, cardiovascular disease, hypertension and stroke, Alzheimer's disease and anemia. The most included general and oral related topics were pharmacological effects of drugs/medications on women, eating disorders/behaviors, puberty, pregnancy, perimenopause, menopause and post menopause, autoimmune diseases and osteoporosis, osteopenia and osteoarthritis. Women's oral health topics most included were oral cancer, dental caries, oral candidiasis, xerostomia, gingivitis and periodontal disease and temporomandibular dysfunction. The least included topic in both degree programs' required courses was lung, ovarian, breast, uterine and cervical cancers.

Discussion

When comparing the 2001 and 2007 surveys, it was discovered that dental hygiene faculty are using less traditional sources and more internet sources to obtain instructional materials on women's health. Because it is essential that faculty use Web sites providing current information, it comes as no surprise that program directors reported 9 out of 10 Web sites listed in the survey increased in use. The use of Web sites www.cdc.gov and www.nidcr.nih.gov increased the most during this 6 year time interval, while www.perio.org was most often used and increased slightly.

From 2001 (2.42) to 2007 (3.37), a significant difference (p=0.004) was identified in the mean number of faculty completing continuing education on women's general health topics. This finding suggests that continuing education materials are still a favored source of instructional material on women's health issues and preferred by many. In addition, it is interesting to note that 33% of dental hygiene program faculty in 2001 and 20% in 2007 had not completed a continuing education course on women's general or oral health topics. It is suggested that more women's health continuing education courses are offered.

Government publications are noticeably important, whether in traditional or internet format. Such documents as Healthy People 2000 and 2010, the 2000 United States' Surgeon General's Oral Health Report and agencies as the National Institute of Research, National Institute of Dento–Cranial Research and Centers for Disease Control and Prevention are utilized widely by dental hygiene faculty as a resource. Because of the relationship of many diseases with the oral cavity and periodontium, the continued use of periodontal internet sites and journals are quite substantial.

When comparing survey results, it is evident that inclusion of many women's general and oral health issues had increased over the 6 year time period. Although none increased at a statistically significant level, the following 5 topics increased in frequency/percent and are of interest to the authors: puberty, pregnancy, perimenopause, menopause and post–menopause, autoimmune diseases, pharmacological effects of drugs/medications on women, eating disorders/behaviors and osteoporosis, osteopenia and osteoarthritis. These topics are of critical importance because each has oral manifestations or special considerations when maintaining oral health such as pregnancy, gingivitis, xerostomia, pemphigoid vulgaris, erosion of enamel or osteoneucrosis of the jaw.[13] These associations should be included in dental hygiene curricula for dental hygienists to provide appropriate health education to patients. In addition, a key role of dental hygienists is to complete a thorough oral examination and identify abnormal tissues. This is an opportune time to inform and discuss findings with patients of possible pathologic lesions and the need to follow–up with a consultation, diagnosis and treatment by a dentist, oral pathologist and/or oral surgeon.

To the author's disappointment, the topic with the largest decrease in percent over the 6 year time in-

terval in associate degree/certificate required courses was lung, ovarian, breast, uterine and cervical cancers. Although these cancers may not be directly related to the oral cavity, the treatment and metastasis of cancers to other body sites may subsequently affect oral health and dental treatment. Because of the high incidences of smoking and lung cancers among females and cervical cancers related to sexually transmitted viruses,[14] it is within the professional realm of dental hygienists to take an active role in educating patients about related health issues.[15–28] This topic slightly increased in percent inclusion in the baccalaureate program required courses.

Alzheimer's disease also had a slight decrease in inclusion in the associate/certificate degree program required courses. This may have been due to the "already full curricula" or new program developments during the 6 year interval. The author was surprised by this finding because of its importance in developing a dental hygiene treatment protocol when treating older adults. On the other hand, there was some increase in the percent inclusion in the baccalaureate degree required courses.

Conversely, the Murray and Fried study surveyed dental hygienists with differing degrees and knowledge levels of women's health topics.[10] As was true of the Murray and Fried study, this study ascertained that baccalaureate degree programs may include more information about women's health topics in required courses. It may be surmised the graduates of baccalaureate degree programs may have more knowledge about the various aspects of women's' general and oral health.

Educationally, it is essential that current and pertinent topics be included in the curriculum in an organized manner or a specific course be implemented in the curricula to enhance learning and retention of this information. This is concurrent with Dewey's philosophy in which educational experiences be progressive, continuous, sequenced and integrated to amplify a student's/graduate's knowledge level.[29] With this philosophy in mind, the dental hygienist, regardless of the degree earned, needs foundation information incorporated throughout the curriculum to build upon.

Constructivists purport experiential learning or application of knowledge in "real world" settings rather than lectures. These student–centered events may include activities such as treating patients in clinic, presenting health lessons to public school children or conducting research to assist the learner in acquisition and retention of information.[30,31] Therefore, the more experiences students have in application of their knowledge, i.e. clinics, shelters, prisons, hospitals, etc, the most influential and valued they are in the health care team.

A potential source of bias in this study was the method in which the validity of the research instrument was executed. The 2001 survey was piloted on dental hygiene directors who were also included in the revised final survey. A better method may have been to ask dental hygiene faculty, not directors, to provide the initial input or to have excluded those directors from the final mailing.

Proposed Working Definition of Women's Health: In 1999, Dr. Sherry Marts, director of the Society of the Advancement of Women, spoke at the American Dental Hygienists' Association Annual Session. In her address, she charged the dental hygiene profession to develop a "working definition" for women's health. She also expressed that a clear articulation of an established policy by the dental hygiene profession may establish the ground work to nurture a collaborative working relationship with other health care professionals, agency officials and government representatives to better address women's health issues. Dr. Marts believed that a working definition may facilitate a common understanding of women's issues and be more likely to achieve a common goal. Therefore, the author proposes a working definition of women's general and oral health for the dental hygiene profession to consider for adoption.

Proposed Women's Health Definition for Dental Hygiene: Women's equitable access to comprehensive quality oral health care by a registered dental hygienist using the dental hygiene process of care to deliver preventive, educational and therapeutic services that address the unique physical, oral, social and psychological aspects of the female throughout life.

Conclusion

This study revealed that women's general and oral health topics varied among dental hygiene curricula based on degree offered. All topics were included in the associate/certificate and baccalaureate degree programs. Topics on lung, ovarian, breast, uterine and cervical cancers were included considerably less than others.

Results verify that dental hygiene curricula do include many women's general and oral health topics. Recognizing that curricular enhancement is always in process, existing program faculty and director efforts are commendable. Yet it does not warrant complacency. One program director commented that it was difficult to include more topics in an "already packed curriculum." The integration of women's general and oral health topics into the existing curricula can be accomplished with the use of alternative instructional methods, community and research projects.

An underlying goal of this study was to assist educators in recognizing the need to include more women's health issues in the current curricula. ADEA past president Pam Zarkowski reiterated: "The public will look to our institutions to prepare oral health care providers who recognize unmet needs and are com-

petent in addressing those needs."[10] It is important that educators commit to adequately preparing graduates to provide competent, comprehensive health care to females of all ages throughout a lifetime.

These results establish baseline data for knowing what women's general and oral health topics are included in dental hygiene program curricula. The information gathered in this project may be useful for future research. Such topics include:

- Assessing the depth and scope, educational methodology, faculty expertise and time committed to women's health topics in class, laboratory or clinic
- Investigating oral health care services provided to female patients/clients by dental hygienists in various clinical settings
- Conducting a 5 year follow–up survey to assess if change had occurred in dental hygiene curricula
- In addition, suggestions for developing a continuing education or dental hygiene course might include:
- Participating in community based volunteer service programs, such as women's homeless shelters, women's penal institutions, domestic violence shelters, homes for unwed mothers, prenatal and natal health clinics and long term health care facilities, that provide valuable experiences for the student and practitioners
- Developing a fact sheet/brochure about women's health to provide relevant information to dental hygienists

This data may also provide information to policy makers and legislators in state and local governments regarding the extent of dental hygiene education and how it may be helpful to influence practice act legislative decisions.

Increased visibility of women's health issues in dental hygiene education, research and practice may promote interdisciplinary collaboration among health care professionals. With the increased emphasis on interdisciplinary and collaborative practice to enhance access and improve delivery of health care services, it is critical that dental hygienists be prepared to be active participants in the health care team. Dental hygienists may be recognized by achieving a competitive entry–level education degree, conducting and publishing both clinical and instructional research to document and validate outcomes and participating with other health care professionals, i.e., physicians, nurses, dentists, social workers and allied health care providers, to demonstrate the primary and secondary preventive and therapeutic care expertise of the dental hygienist.

In an article by Gadbury–Amyot et al,[32] dental hygiene professionals identified priority initiatives to include dental hygienists an integral part of the health care team. These initiatives included: health services research, access to care/underserved populations and health promotion/disease prevention.[32] To conduct and publish research in these areas would enhance the profession's status and validate its worth. Certainly, additional investigation of women's health adds to the body of knowledge that dental hygienists desire.

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Acknowledgement

The author thanks Marcia Gladwin, RDH, EdD for her assistance in developing the survey instrument and serving on my dissertation committee at West Virginia University School of Dentistry, Dental Hygiene.

The author also thanks Robert Howell, my husband and computer genius, for helping me with tables and figure details.

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