

A Successful Strategy to Integrate Sex and Gender Medicine into a Newly Developed Medical Curriculum

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Abstract

Background: A new modular, outcome-based, interdisciplinary curriculum was introduced for undergraduate medical education at one of the largest European medical faculties. A key stated institutional goal was to systematically integrate sex and gender medicine and gender perspectives into the curriculum in order to foster adequate gender-related knowledge and skills for future doctors concerning the etiology, pathogenesis, clinical presentation, diagnosis, treatment, and research of diseases.

Methods: A change agent was integrated directly into the curriculum development team to facilitate interactions with all key players of the curricular development process. The gender change agent established a supporting organizational framework of all stakeholders, and developed a 10-step approach including identification, selection, placing relevant sex and gender medicine–related issues in the curricular planning sessions, counseling of faculty members, and monitoring of the integration achieved.

Results: With this approach, quantitatively sex and gender medicine–related content was widely integrated throughout all teaching and learning formats and from early basic science to later clinical modules (94 lectures, 33 seminars, and 16 practical courses). Gender perspectives involve 5% of the learning objectives and represent an integral part of the assessment program. Qualitatively, the relevance of gender (sociocultural) differences was combined with sex (biological) differences in disease manifestation throughout the curriculum.

Conclusions: The appointment of a change agent facilitates the development of systematic approaches that can be a key and serve as practice models to successfully integrate new overarching curricular perspectives and dimensions—in this case sex and gender medicine—into a new medical curriculum.

Introduction

MEDICINE IN THE 21st century is characterized by an ongoing rapid and global increase in knowledge and understanding of human health and disease as well as progressive discussions on how best to approach them. Medicine is constantly changing and so is undergraduate medical education. Medical progress should continuously be evaluated regarding its relevance for incorporation into undergraduate medical curricula. Diversity issues such as gender/sex, age, culture or ethnicity, religious beliefs, sexual orientation, and disabilities represent one area of major changes in knowledge

and is an understanding and perspective that has impacted medicine in recent years.^{1,2} Undergraduate medical education has some tendency to stereotype patients through the study of presenting clinical signs and symptoms, yet it is evident that diversity issues have an important influence on the prevention, development, diagnosis, clinical presentation, progression, and treatment of diseases. They can also lead to different health behavior, including the acceptance of preventive measures and therefore require adequate knowledge and skills from medical doctors.^{3–7}

The impact of sex and gender represents a major domain in the field of diversity and is analyzed in the novel discipline of

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sex and gender medicine.^{8,9} Sex and gender medicine takes into account both biological sex and gender as a sociocultural process and their effects on women's and men's health to improve health and health care for both women and men.^{10,11} Because sex and gender cannot be properly separated in the medical field, biological sex is seen to influence health by modifying one's behavior and lifestyle and gender-behavior can modify biological factors and thereby health, thus the term "sex and gender medicine" was introduced.¹²

Since sex and gender medicine is rapidly growing in respect to knowledge and importance,¹³ the content and modality of its implementation are relevant questions in the development of novel strategies for undergraduate medical education.^{14–18}

In 2010, a large European medical faculty, the Charité–Universitätsmedizin Berlin, started to enroll all new medical students into a new medical curriculum (see Supplementary Fig. 1; Supplementary Data are available online at www.liebertpub.com/jwh). This undergraduate program is of modular structure, fully integrated, competence based, outcome oriented, and involves patient contact from the beginning. The new curriculum has been sequentially (i.e., module and term-wise) planned and implemented following a standardized, systematic, and faculty-wide approach. Along with the fundamental curricular changes, the faculty directors declared the goal to implement sex and gender medicine and gender perspectives throughout the curriculum and assigned a change agent to achieve this mission. The final aim is to foster the students' ability to apply the gender perspective as an important tool to improve their diagnostic, clinical and treatment skills as well as communication abilities with the patient. The consideration and knowledge of sex and gender differences in the development, diagnosis, and treatment of diseases results in a more personalized, cost-effective, and better quality of medical care for men and women.¹⁹

Since both the medical treatment as well as the interaction between the doctor and the patient is highly influenced by gender,^{20–23} the students need to be aware that next to clinical relevance, gender roles, and gender stereotypes are important aspects that can affect their professional activities.²⁴ Many diseases, like thyroid gland disorders²⁵ for instance, and various cancers follow different patterns depending on the patient's sex.²⁶ Gender as the psychosocial and the cultural determinant of the sex of the patient is an important predictor of many attitudes and behaviors that have an impact on health and disease.²⁷ Several studies have shown that communication can lead to different treatment decisions depending on the gender/sex of the patient or doctor.²¹ For example, women are more likely to receive prescriptions during a visit to the physician, are more often prescribed psychotropic medication, and spend more money on prescription and nonprescription drugs in general.²⁸

A standard for integration of sex and gender medicine and gender aspects in undergraduate medical education was proposed by Verdonk et al.²⁹ This includes: (1) a list of diseases and issues with sex and gender differences which are to be recognized and explained including risk factors, prevention, development, diagnosis, progression, and treatment of diseases; (2) the incorporation of gender differences into the final block objectives; (3) an education that focuses on both biomedical and sociocultural differences; (4) an edu-

cation on gender differences over the course of several study years (minimum of 2 years); (5) a coverage of at least six to eight blocks of the central curriculum; and (6) the opportunity to select one optional block on sex and gender issues.

In this article, we report on systematic strategies for the integration of new aspects (e.g. sex and gender medicine issues and gender perspectives) by a change agent and on the extent and quality of curricular implementation, which was achieved in reference to the standard defined by Verdonk et al.²⁹ The following questions are addressed: (1) How could sex and gender medicine issues be integrated into the different teaching formats of the new curriculum and what factors played a role? (2) Was the integration successful?

Materials and Methods

Basic information on the new curriculum and planning process

The new undergraduate medical training program is 6 years long and follows the European Union standard requirement of 5500 teaching hours per student. There are two intakes per year, comprising 300 students each. Years 1–5 consist of 10 semesters and comprise 40 modules. Year 6 consists of 3 clinical rotations, each 4 months long. The planning of the modules of the new curriculum started in 2010 and was finalized in 2014. During each curricular development cycle, four modules of one semester were planned. The planning cycle began nine months before the corresponding semester started. Module planning and design involved a standardized eight-step approach, with eight sessions, where one session was 2 hours per week.

Introduction of a change agent for sex and gender medicine

The main objectives of the change agent were the development of a supporting organizational structure for sex and gender medicine and gender perspectives as well as a standardized approach along the general curricular development process allowing a systematic and efficient incorporation of sex and gender medicine and gender aspects into the new curriculum. It also involved a monitoring of the integrated contents.

There was one change agent employed for a full position as research officer being recruited through a common vacancy announcement. The position was co-financed by a grant of the Berlin state government (Berliner Chancengleichheitsprogramm). The change agent did not receive any special training, but was supported—mainly content-wise—by the Institute of Gender in Medicine at Charité. That person was then given the opportunity and also expected to deepen his/her knowledge while being in this position ("learning on the job"). In addition to the characteristics similar to those of a curriculum developer, the key features of the change agent were a medical background (medicine, public health) and a qualification involving social sciences/gender studies. Also, a thorough knowledge of sex and gender medicine aspects as well as gender mainstreaming into organizations, like those of higher education institutions, were compulsory. It is not necessary that the change agent is in fact a medical doctor, but she/he needs to have a reasonable understanding of medicine.

Establishing a supporting organizational framework for incorporating sex and gender medicine into the new curriculum

The change agent established an organizational framework based on the resources available at the university and the structures and stakeholders providing support to the integration of sex and gender medicine–related aspects into the new curriculum (see Fig. 1). The key to the organizational framework was the placement of the change agent directly into the project management team in charge of the curricular development process of the new curriculum. The project management team consists of an interdisciplinary group of curriculum developers and works in close and constant communication with (1) faculty delegates from all disciplines and departments; (2) centrally located educational experts for e-learning, problem-based learning, communication training, evaluation, and assessment; and (3) members of the faculty directory, especially the dean of student affairs. By being part of this team, the change agent participated regularly in the module planning process and thus could ensure that diversity perspectives, especially sex and gender medicine aspects, were taken into consideration in all important decisions during each step of the curricular planning process.

The work of the change agent was supported by three pillars: governance, faculty, and society (Fig. 1). The faculty directors depicted the goal—besides the initial project concept and a successful grant application—to widely foster sex and gender medicine in research, practice and education (“governance”). The meetings of the curricular academic board were held weekly. The change agent participated actively and provided routine updates on the incorporation of sex and gender medicine–related issues during the module planning process. Further support came from the equal opportunities officer of the faculty, who supported the change agent politically in the module planning sessions and in the meetings of the curricular academic board and the board of the faculty directors when necessary.

The second pillar (“faculty”) represents internal professional support by the faculty. This occurred mainly along module planning processes with constant and intense interactions with different faculty members (i.e., the teaching

coordinators and professors of the Charité departments and institutes who were counseled individually on sex and gender medicine issues when appropriate). An intense and regular cooperation and interaction was established with the Institute of Gender in Medicine at Charité that significantly contributed to the process.

The third pillar (“society”) was formed by society demands (e.g., higher attention to gender and diversity in medical research, practice, and education). This led to political initiatives and pressure on universities and contributed to increased public funding for this subject, including funding opportunities for this project. Furthermore, the knowledge in the population of sex- and gender-specific aspects in medicine has increased mainly through media reports and discussions. The change agent served as contact person for media and was involved in Berlin governmental activities on sex- and gender-specific aspects in medical education to further civil society’s enhance the awareness of those issues.

Approach to identify, select, and place sex and gender medicine issues into the module planning process

The change agent developed and followed a systematic, 10-step approach (Fig. 2). For the planned curriculum, this approach involved three phases and was adjusted to the general standardized curriculum planning process.

The first phase (pre-module planning phase, steps 1–3) served as a preparation for the upcoming module planning cycle (Fig. 2). The basis here was an extended, wide-ranging search on sex and gender medicine–related knowledge, skills, and attitudes to be potentially integrated into specific modules. This involved a systematic search of the published literature^{30–35} and of international learning objective catalogues.³⁶ Further input came from the Institute of Gender in Medicine,⁹ the equal opportunities officer, and other gender experts of the faculty. The potential teaching and learning contents were then selected on the basis of what had previously been incorporated into the curriculum and the appropriateness for undergraduate medical education.

During the module-planning phase (steps 4–8), the selected sex and gender medicine issues were placed in the early planning sessions. The role of the change agent was then two-fold: (a) to foster and support the curricular integration of teaching courses predominantly on sex and gender medicine and gender perspectives with sex- and gender-related teaching content and sex- and gender-related learning objectives (monothematic courses), and (b) to position and aid the inclusion of teaching contents for items in which sex and gender medicine aspects were not yet incorporated or were insufficiently visible. Furthermore, the change agent provided counseling to faculty members on sex and gender medicine aspects to be included in their teaching proposals when appropriate, and provided support with the formulation of learning objectives and the course description. At the end of the module-planning phase, the change agent monitored the curricular incorporation of sex and gender medicine issues actually achieved and their translation into the assessment blueprint.

In the third phase (post-module planning, steps 9–10), the change agent participated in the module review process of the curricular academic board, in case additional information on

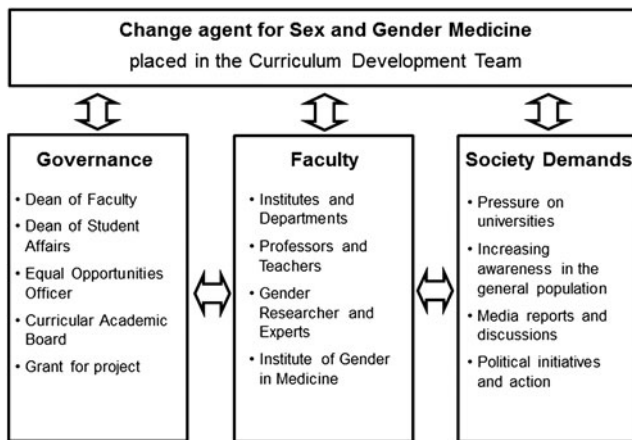


FIG. 1. Organizational framework at the university to support the integration of sex and gender medicine and gender perspectives into the new medical curriculum.

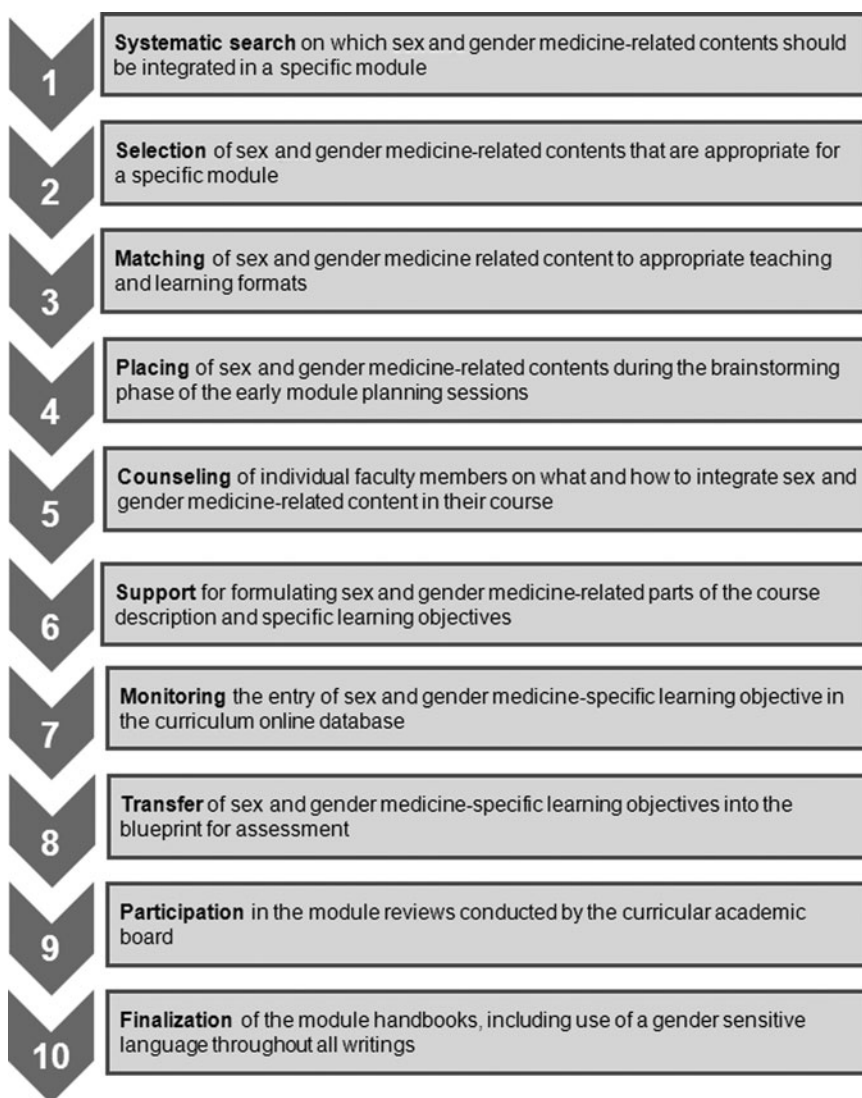


FIG. 2. Systematic, 10-step approach to incorporate sex and gender medicine issues along the regular module-planning cycles of the new medical curriculum.

the incorporated sex and gender medicine aspects was needed. After the module-planning group had addressed and integrated the proposed changes by the curricular academic board appropriately, the change agent supported the finalization of the module handbook by editing it for the use of gender sensitive language throughout all writings.

Results

Quantitative and qualitative results demonstrating the success and efficacy of the described approach as well as the identified success factors for the integration of sex and gender medicine aspects into the curriculum are summarized as follows.

Quantitative integration of sex and gender medicine aspects throughout the curriculum

The integration of sex and gender medicine aspects and gender perspectives throughout the curriculum was realized in the form of monothematic courses on sex and gender medicine and through the integration of sex and gender medicine aspects into other subject courses whenever deemed relevant by the

overall subject and in agreement with the lecturers. Sex and gender medicine-relevant teaching content was made explicit in module handbooks (e.g., in learning objectives, title, and short descriptions of the individual teaching courses).

Figure 3 provides an overview of the quantitative integration of sex and gender medicine aspects within the entire curriculum into the different modules and the different teaching formats. In total, there are 94 lectures (out of 442, 21%), 33 seminars (out of 284, 12%), and 16 practical courses (out of 199, 8%) integrating sex and gender aspects. Lectures are given to a large group of students (80–300 students depending on the semester and the rotation of modules). The size of a seminar group is 20 students, and of a practical course, either 8 or 16 students. Lectures focus on conveying cognitive skills, whereas seminars convey mostly cognitive and some practical skills. In practical courses, practical skills-oriented learning objectives prevail. In the basic sciences modules (modules 1–8), there are six lectures including sex and gender aspects as teaching content and/or learning objective; three of them are monothematic courses on sex and gender aspects taught by gender experts of the faculty. In the organ and body system modules (modules 9–20), there are

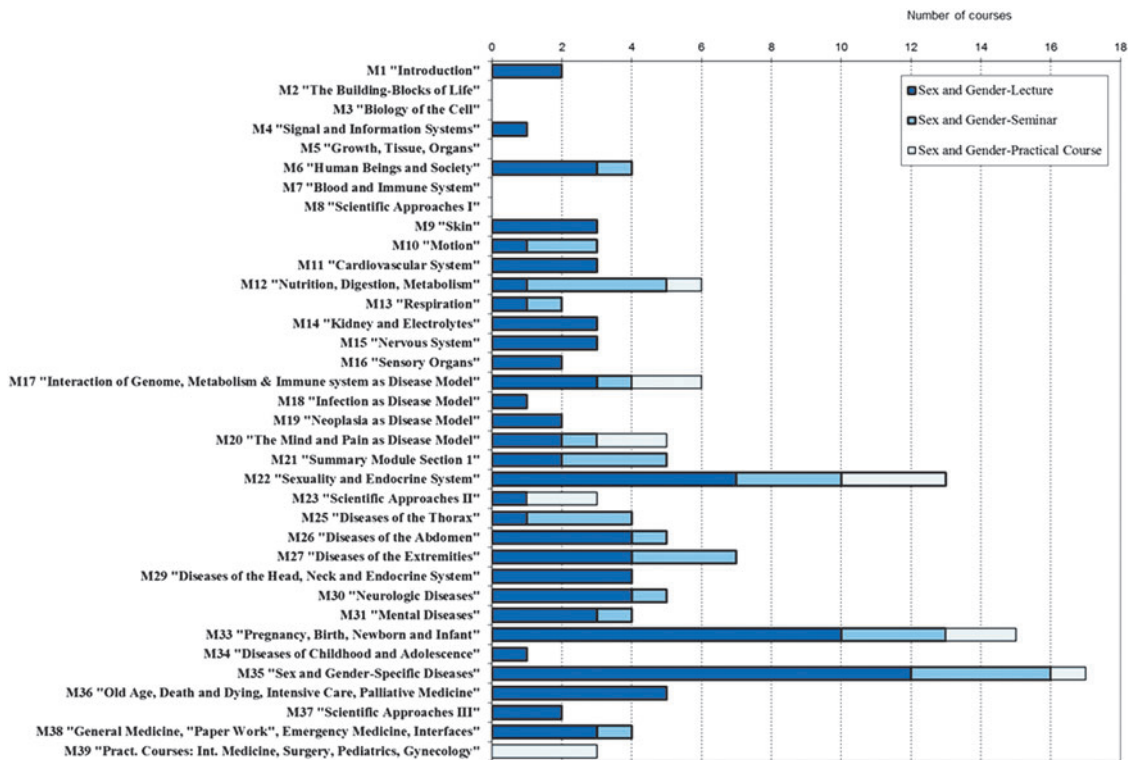


FIG. 3. Integration of sex and gender aspects and perspectives into different teaching formats and into the modules throughout the new undergraduate medical curriculum (M, module). Color images available online at www.liebertpub.com/jwh

25 lectures, 9 seminars, and 5 practical courses incorporating gender aspects as teaching content and/or learning objectives. One lecture is a monothematic course on sex and gender medicine aspects taught by the Institute of Gender in Medicine.

In the clinical modules (modules 21–39), there are 60 lectures, 22 seminars, and 8 practical courses with integrated gender aspects as teaching content and/or learning objective. In Module 35, "Sex and Gender-Specific Diseases," there are 12 lectures, 4 seminars, and 1 practical course on gender aspects. Out of these lectures, three are taught by the Institute of Gender in Medicine.

In total, the new curriculum includes 223 learning objectives (out of 4456, 5.0%), whereby there is an explicit focus on sex- and gender-specific aspects. These learning objectives provide a basis for the assessment blueprint and thus for the incorporation of sex and gender medicine aspects and gender perspectives into the regular assessment program of the new curriculum.

Qualitative integration of sex and gender medicine aspects throughout the curriculum

The qualitative integration of sex and gender medicine into the new curriculum is illustrated in Tables 1 and 2.

In addition to courses on sex-specific expressions of diseases, the impact of gender (sociocultural) differences was incorporated throughout the curriculum in order to provide a holistic sex and gender medicine view on the health and disease of women and men.

Table 1 shows examples of sex and gender medicine-specific learning objectives that were integrated into the different modules. In the first week of their studies (i.e., during Module 1, "Introduction," the students have two compulsory lectures on sex and gender medicine and gender aspects in health). One of the lectures is taught by the Institute of Gender in Medicine with the title "Sex and Gender Aspects in Clinical Medicine." Table 1 lists one of its learning objectives. The other discusses the impact of gender and other aspects on career planning in medicine (Table 2). Furthermore, examples of learning objectives within the basic sciences modules (module 4), the organ and body system modules (module 11), the disease model modules (module 19), the clinical modules (module 35) and a communication course on gender-specific aspects in doctor–patient communication discussing gender roles and gender stereotypes are depicted.

Gender perspectives were also integrated into the modules with a focus on scientific approaches (Table 1) to make students consider diversity, sex, and gender aspects when designing, conducting, and presenting their compulsory scientific project or when interpreting scientific results in general.

A new qualitative dimension for the curricular integration of sex and gender medicine and gender aspects was reached by assigning one compulsory, 3-week module in the ninth semester to sex and gender differences in health and diseases (Module 35, "Sex and Gender-Specific Diseases"). In this module, one week is dedicated to broaden and deepen sex and gender medicine knowledge and understanding on factors influencing the development of sex and gender differences in

TABLE 1. EXAMPLES OF INTEGRATING SEX AND GENDER MEDICINE-SPECIFIC LEARNING OBJECTIVES INTO THE NEW MODULAR MEDICAL CURRICULUM

Students shall be able to:

M1: “Introduction” (first semester)

- define sex (biological) and gender (sociocultural)

M4: “Signal and Information Systems” (first semester)

- name functions that are sexual steroid hormone-dependent and gender-specific symptoms of diseases (cardiovascular diseases)

M6: “Human Beings and Society” (second semester)

- reflect on the influence of gender-specific roles on the doctor-patient relationship
- reflect on the relevance and influence of their own gender stereotypes on the doctor-patient relationship

M11: “Cardiovascular Diseases” (third semester)

- name the most important psychosocial and gender-specific risk factors for cardiovascular diseases
- name the clinical forms of manifestation of myocardial infarction including gender-specific differences

M19: “Neoplasia as Disease Model” (fifth semester)

- explain the possibilities of primary prevention of neoplastic diseases taking age and patient gender into consideration
- explain the possibilities of support and the different needs of the patient taking gender and sex aspects into account

M23: “Scientific Approaches II” (sixth semester)

- explain the strategic planning of a scientific study using the example of new therapies of inflammatory diseases taking aspects like sex, gender, age and comorbidities into consideration

M35: “Sex and Gender-Specific Diseases” (ninth semester)

- explain gender differences on a cellular level for type 2 diabetes mellitus, lung cancer and cardiovascular diseases
- conduct a gender sensitive anamnesis, gender sensitive diagnosis and therapy
- explain gender-specific differences in pharmacokinetics
- explain the gender bias as far as the development of pharmaceuticals and their admission to the market and its possible consequences are concerned
- explain gender differences in pain perception on an anatomic and functional level
- explain the basics for the development of gender differences in inflammatory liver diseases
- explain gender differences in health behavior

M37: “Scientific Approaches III” (ninth semester)

- take diversity aspects like gender, age and ethnicity into consideration when interpreting and communicating the study results
-

M, module.

diseases like genes, hormones and the environment, as well as sex and gender differences in diagnosis, disease manifestation, management, and therapy. Furthermore, sex and gender differences in pharmacodynamics and pharmacokinetics, the health behavior of men and women, and the relevance of domestic violence are incorporated. The other weeks cover diseases of the sexual organs, such as hyperplasia of the prostate gland, prostate carcinoma, or diseases of the penis as well as, for example, ovarian or vulva carcinoma and uterine bleeding. Infertility, HIV/AIDS, sexually transmitted diseases, and rehabilitation after mamma and prostate carcinomas are also discussed. For all issues covered in this module, both the impact of sex and gender are part of teaching and learning. Table 1 shows some of the learning objectives integrated into this module. Electives also incorporate sex and gender aspects; for example, there is one elective module on sexual and reproductive autonomy specifically covering gender issues in family planning including abortion.

Table 2 illustrates the integrated sex and gender medicine issues throughout the curriculum compared with those proposed by Verdonk et al.²⁹ and the ones going beyond these criteria, for instance, sex and gender aspects in pain perception, pediatric orthopedics, and neoplasia.

Success factors for the curricular integration of sex and gender medicine

In our view, the following factors were important for the successful and far-reaching integration of sex and gender medicine aspects and gender perspectives into our undergraduate medical curriculum:

- appointment of a gender change agent;
- placement of the change agent into the curriculum development team;
- establishment of a supportive structure;
- development of a 10-step approach;
- constant participation and attendance of the module design sessions;
- close contact with the main stakeholders of the curricular change process;
- continuous interaction with the Institute of Gender in Medicine and other gender experts and gender researchers of the faculty with expertise in this field;
- institutional support by the dean of the faculty, the dean of student affairs, and the equal opportunities officer; and
- civil society support, political interest, and interest by the media.

TABLE 2. EXAMPLES OF INTEGRATING GENDER-RELATED ISSUES INTO THE NEW UNDERGRADUATE MEDICAL CURRICULUM

Integrated sex and gender medicine aspects according to those proposed by Verdonk et al.²³

M22, 33, 35: Transitional phases (menopause, adolescence)
 M25, 35: Pharmacotherapy
 M11, 25: Cardiovascular diseases
 M14, 35: Urinary tract infections, other micturition complaints
 M35, 36: Urinary incontinence
 M22, 32, 35: Reproduction, contraception, sexually transmitted diseases, infertility
 M31, 34: Eating disorders
 M6, 12, 17: Obesity
 M31: Addiction to alcohol or benzodiazepines
 M20, 31: Depression, anxiety disorders
 M22, 33, 35: Sexual abuse and violence, child abuse, partner violence
 M6, 20, 31: Post-traumatic stress disorders
 M6, 22, 35: Sexuality and sexual problems, sexual identity
 M6, 35: Communication
 M6, 12, 22, 35: Gender and culture
 M6, 22, 35: Gender-specific health care/quality of care

Further integrated issues taking gender differences into account beyond those proposed by Verdonk et al.²³ (in the order in which they appear in the curriculum)

M1: Career planning
 M4: Basic sciences: Steroid hormones
 M6: Social determinants of health and disease
 M9: Hormones and skin
 M9: Dermatitis and eczema
 M10: Osteoporosis
 M13: Chronic obstructive pulmonary disease
 M15: Multiple sclerosis
 M15: Idiopathic Parkinson syndrome
 M15: Dementia
 M17: Diabetes mellitus
 M17: Hemochromatosis
 M17: Autoimmune diseases
 M18: Hepatitis
 M19: Neoplasia
 M20: Pain perception
 M21: Burn-out
 M23 and M37: Research
 M25: Bronchial asthma
 M26: Transplantation
 M26: Irritable bowel syndrome
 M27: Orthopedics
 M27: Sports injuries
 M27: Pediatric orthopedics
 M29: Hearing disorders
 M29: Diseases of the mucosa

Discussion

Integration of sex and gender medicine in other medical curricula

The inclusion of sex and gender medicine into undergraduate medical curricula has started recently and has already made progress in several countries. In Europe, for example Radboud University in the Netherlands,^{29,37} Umea University,³⁸ and the Karolinska Institute³⁹ in Sweden as well as several universities in Austria⁴⁰ have made significant efforts to integrate sex and gender aspects into their existing curricula and improve the gender awareness of future medical doctors.⁴¹ Also, in Canadian^{15,16,42,43} and American⁴⁴⁻⁴⁶ medical schools, sex- and gender-sensitive curricula are be-

ing developed.⁴⁷ Verdonk et al. developed the previously described catalogue of characteristics for a successful integration of gender into a medical curriculum, first for the basic curriculum of the University of Nijmegen²⁹ and then for a Dutch national project,⁴⁸ and developed the Nijmegen Gender awareness scale that was used in a study with Dutch and Swedish medical students.⁴⁹ Dielissen et al. have also developed a teaching program in gender-specific medicine for general practice training.⁵⁰

Compared with the work by Verdonk et al.,²⁹ we have gone further and have integrated sex and gender differences into the additional issues presented in Table 2 as described previously. Furthermore, we also achieved an integration into the learning objectives and therefore into the final module (block)

objectives of the study program as well as into the assessment blueprint (criterion 2); the integration of both biomedical (sex) and sociocultural (gender) differences all over the curriculum (5 years, 40 modules; criteria 3–5); and one elective and one complete module on sex and gender-specific diseases being compulsory for all students (criterion 6). In this sense, our new curriculum has successfully integrated sex and gender and goes beyond the criteria already developed.

Barriers

Several barriers were experienced during the curricular integration of sex and gender medicine aspects within the framework of this study. One barrier involved some resistances from faculty members towards this subject. However, in many cases this could be overcome by the change agent through qualified arguments to explain the integration and the provision of research findings on sex and gender differences in diseases. Another barrier was the limited curricular teaching time available in the curriculum and the competition of all disciplines to place their contents. This problem was partly approached by deciding to integrate the selected sex and gender medicine issues into other subject courses over the whole curriculum. Another barrier was and still is that the planned courses are not always taught by the actual course planners who were present in the module planning sessions and responsible for the course conception, but rather by other faculty members of their respective institute or clinic. In some cases, partly due to insufficient briefing by the course planner, those lecturers did not teach the integrated sex and gender medicine aspects as originally foreseen. Finally, a concern may be the sustainability of the integrated sex and gender medicine aspects when there is no more change agent. We think that the establishment of a quality control process linked to the periodic module review cycles and the curricular academic board as well as a network of sex and gender medicine experts within the faculty participating in the periodic module review cycles and the approval of curricular changes by the curricular academic board will contribute to the sustainability of the integrated aspects.

Limitations

When interpreting this report, several limitations should be considered. Firstly, the study was situated in a single, large university medical school with relevant institutional support. Secondly, there was third party funding for the change agent. Thirdly, the integration of sex and gender medicine issues was paralleled with the introduction and implementation of a completely new curriculum. This may limit its transferability to situations where different conditions prevail. Those could for instance be differences in the size of the medical school, the degree of institutional support, the resources for a change agent, or the extent of the curricular change process.

Concept for different levels of sex and gender medicine integration

Figure 4 illustrates our concept of different levels of integration of sex and gender medicine. This model is based on Silverman's⁵¹ description of the integration of communication skills into a medical curriculum. While the loose appearance of sex- and gender-related content represents a

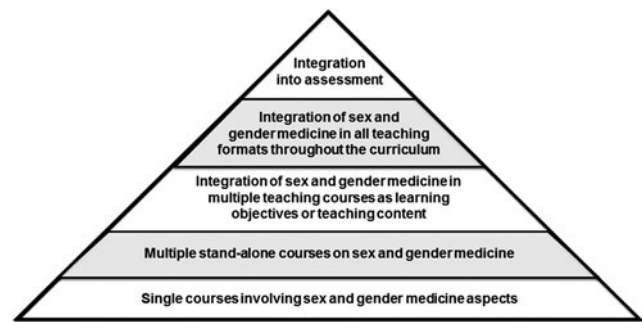


FIG. 4. Levels of sex and gender medicine integration into a medical curriculum.

low level of integration, full integration is achieved when sex and gender medicine is taught in the form of sex and gender medicine-specific and complementary courses, multiple teaching formats and modules, and when it is an integral part of the assessment program. All of the above elements could be achieved in the current curriculum.

Conclusions

Appointing a change agent is a successful strategy for the systematic and successful integration of new educational overarching aspects and perspectives (e.g., sex and gender medicine and gender perspectives) into a new medical curriculum. This clearly applies to the integration of sex and gender medicine but may apply to other diversity categories as well. We believe that this report offers relevant and adaptable approaches for other medical faculties, who wish to achieve a comprehensive integration of sex- and gender-related content into their curricula. As those approaches are already developed, we believe that it will be possible for other faculties to integrate sex and gender medicine aspects with less financial and time resources than our faculty has needed.

Acknowledgments

The authors wish to thank the curriculum development team and the curricular academic board of the new modular medical curriculum for the continuous support of this project.

The study was financed by a grant from the Berlin state government within the Promotion of Gender Equality in Research and Higher Education program (Berliner Chancengleichheitsprogramm).

The content of this article is solely the responsibility of the authors and does not necessarily represent the official views of the Charité–Universitätsmedizin Berlin.

Author Disclosure Statement

No competing financial interests exist here.

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Supplementary Data

Practical Year (Internal Medicine, Surgery, Elective)						
S10	General Medicine, „Paper Work“, Emergency Medicine, Interfaces M38	Practical Courses: Internal Medicine, Surgery, Pediatrics, Gynecology M39	Revision Course I M40	Revision Course II M40	S10	
Problem-Based Learning – Working with patients – Communication, Interaction and Team Work						
S9	Pregnancy, Birth, Newborn and Infant M33	Diseases of Childhood and Adolescence M34	Sex and Gender- Specific Diseases M35	Old Age, Death and Dying, Intensive Care, Palliative Medicine M36	Scientific Approaches III M37	S9
Problem-Based Learning – Working with patients – Communication, Interaction and Team Work						
S8	Diseases of the Head, Neck and Endocrine System M29	Neurologic Diseases M30	Mental Diseases M31	Elective / Individual Focus III M32	S8	
Problem-Based Learning – Working with patients – Communication, Interaction and Team Work						
S7	Diseases of the Thorax M25	Diseases of the Abdomen M26	Diseases of the Extremities M27	Elective / Individual Focus II M28	S7	
Problem-Based Learning – Working with patients – Principles of Medical Theory and Practice						
S6	Summary Module Section 1 M21	Sexuality and the Endocrine System M22	Scientific Approaches II M23	Elective / Individual Focus I M24	S6	
Problem-Based Learning – Working with patients – Communication, Interaction and Team Work						
S5	Interaction of Genome, Metabolism & Immune System as Disease Model M17	Infection as Disease Model M18	Neoplasia as Disease Mode M19	The Mind and Pain as Disease Model M20	S5	
Problem-Based Learning – Working with patients – Communication, Interaction and Team Work						
S4	Respiration M13	Kidney and Electrolytes M14	Nervous System M15	Sensory Organs M16	S4	
Problem-Based Learning – Medical Skills Training – Communication, Interaction and Team Work						
S3	Skin M9	Motion M10	Cardiovascular System M11	Nutrition, Digestion, Metabolism M12	S3	
Problem-Based Learning – Medical Skills Training – Principles of Medical Theory and Practice						
S2	Growth, Tissue, Organs M5	Human Beings and Society M6	Blood and Immune System M7	Scientific Approaches I M8	S2	
Problem-Based Learning – Medical Skills Training – Communication, Interaction and Team Work						
S1	Introduction M1	The Building-Blocks of Life M2	Biology of the Cell M3	Signal and Information Systems M4	S1	
Problem-Based Learning – Medical Skills Training – Communication, Interaction and Team Work						

SUPPLEMENTARY FIG. S1. Overview of the modular structure and the module themes of the new undergraduate medical curriculum. The symbol indicates the integration of sex and gender medicine issues and gender perspectives.