Zdrowie Publiczne i Zarządzanie 2016; 14 (2): 86–92
www.ejournals.eu/Zdrowie-Publiczne-i-Zarzadzanie, doi:10.4467/20842627OZ.16.012.5574

Competencies of Information Professionals in the Context of Dynamic Information Needs of Health Care Staff

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Abstract

The article describes the functions of information professionals in modern health care. Selected surveys of librarians' educational needs are presented and discussed, and a list of professional competencies indispensable in answering health professionals' information needs is proposed. The potential of academic training of librarians and information professionals offered by Polish universities is also discussed. The unique value of information professionals' competencies in offering information services to different groups of health professionals and patients, their responsibility and partnership in either research or therapeutic teams are accentuated.

Key words: **embedded librarianship, medical librarian, informationist, information competencies, health competencies, training, information employee**

Słowa kluczowe: **bibliotekarstwo uczestniczące, bibliotekarz medyczny, informacjonista, kompetencje informacyjne, kompetencje zdrowotne, kształcenie, pracownik informacji**

Ministerstwo Nauki i Szkolnictwa Wyższego

Przygotowanie i edycja anglojęzycznych wersji publikacji finansowane w ramach umowy 914/P-DUN/2016 ze środków Ministra Nauki i Szkolnictwa Wyższego przeznaczonych na działalność upowszechniającą naukę.

Expectations regarding librarians and information professionals are modulated in response to changes in the pace and manner of human communication, the development of science and technology, as well as become adapted to the life of the modern man, including his functioning in the workplace. These factors, affecting the functioning of libraries and information centres, can be observed and experienced also in the sphere of health care learning and practice, in its various institutions, disciplines, professions, etc. Library service meeting the information needs of health care workers has a long tradition, in many countries of the modern world deriving from the collections gathered by medical associations, although today its implementation has a completely different nature.

An important element shaping information work in this area has always been a growing variety of supported users – ranging from scientists and practicing physicians, the remaining medical staff, administration employees, to patients and the general public. Meeting their needs invariably involves enormous responsibility arising from risk (threat to life and health), which may be associated with supplying inadequate or incomplete information [1]. There is a growing resource of information and referring publications, and a greater access to full texts and databases collecting different types of data from the area of health sciences. There is also a growing group of tasks related to training users in the area of information literacy, copyright protection, the ability to prepare materials for publication, sharing digital collections (see below), many of which are due to the development and application of digital technologies. Because medical librarians are continually obliged to adjust their competences to the changing requirements of the supported environment, this professional group has always been perceived in the milieu as a kind of a role model.

As a result of the changing library practice, related jobs and responsibilities assigned to them become differentiated. Given the dynamics of that evolution, the process of formulating the competences required of the

staff information and tasks they have to carry out working in health care facilities is actually a continuous process requiring constant analysis and updating skills and activities.

The following text is a presentation of the specific scope of activities of health care information professionals, taking into account their different places of work – medical universities, clinical centres, hospitals – and the ways they cooperate with the supported environment. Based on the literature, the users themselves have formulated a list of indispensable competencies in today's use of information. Selected studies of the analyzed theme were presented, as well as the potential use of educational programmes for information specialists in the area of health sciences working in academic units currently conducting studies related to library and information science (as the law does not put limitations on how the educational offer is shaped, the studies function also under non-traditional names).

Competencies of information specialists in the field of health sciences

In the Polish milieu of health information professionals, a term that would be short, unambiguous, yet easy to use in different situations *and* describe the person responsible for information services involving the processes of scientific, practical and therapeutic communication implemented in health care, has not yet been formulated. Traditionally, for many years the group has been referred to as *medical librarians*, which reflects well the specificity of the job: both in terms of place of activity (library in the classical sense), and the subject. The term *librarian* remains valid, especially if the name of the institution or its branch is equally traditional; however, in the literature[1] also specific determiners clarifying the tasks of this employee can be found (e.g. *biomedical librarian*) or their high specialization (*embedded librarian, research-embedded health librarian, outreach librarian*), as well as other terms, corresponding more to information services offered (e.g. *informationist, information specialist in context*). According to the proposal of Barbara Niedźwiedzka, the *informationist, information specialist in context* (Polish: *informacjonista, asystent informacji w danym obszarze*) is an employee specializing in information services meeting the specific needs of a small group of clients, who remains in contact with them, and knows and actively pursues the objectives of that group [2, p. 39].

The consequence of the development and diversification of medical sciences and health sciences [3] is that the job titles of library and information positions have come to include terms related to a particular specialization or business profile. Based on a literature review, I. Diane Cooper and Janet A. Crum, extracted the following names: *clinical informationist, bioinformationist, public health librarian, nursing librarian, disaster informationist* [4, 5]. In turn, some of the terms reflect a formal diversity of the employee's duties, for example: *systematic review librarian, emerging technologies librarian*, *continuing medical education librarian*, *grants development librarian*, or *scholarly communication librarian* [4]. As can be seen from the above examples, the evolution of this professional group can be observed mainly abroad, in Polish information literature the prevailing term still being *medical librarian*, albeit other terms are being proposed, such as *net-librarian, digital librarian* [7] or *clinical librarian* [8].

The competencies of the health sciences information employee include primarily a set of qualifications which a graduate in bibliology and information studies should have. These include skills regarding the implementation of information processes relating mainly (but not exclusively) to documentary information, and therefore preserved in various forms and in various types of media. This group of processes begins with the collection of own tools or tools providing access to resources (electronic, as well as printed). The next step is a wide range of activities in developing formal and material collections (creation of metadata), which will allow them to be found by the user – on a shelf, in a catalogue, full-text database, etc. The last step is making the resources available (own and those of other centres, via the Internet), which also includes many activities, such as contacting users and meeting their information needs or maintaining repositories of publications by employees of the institutions of the home institution (very common in the case of medical schools libraries, research institutes and teaching hospitals).

Undoubtedly even a partial knowledge of medicine or related disciplines is a great added value, because it definitely facilitates understanding the information needs of users. Almost until the end of the twentieth century in many medical libraries (albeit not Polish ones) the possession of such insight was regarded a condition of employment [9], as lacking knowledge of specialist terminology or orientation in the literature was considered to significantly impede work. Today it is the librarians themselves [10] who see that the lack of field knowledge is an initial barrier, which can, however, be quite quickly overcome, especially with the high intensity of contact with users.

The above-mentioned basic information processes and their components, preceded by library and information studies, implemented in libraries that support specific areas of research or professional activity, are of course adapted to their specificity (the pace of work, daily and annual schedules, the allocation of tasks, etc.) and needs (e.g. the level of detail of information queries, chronological range of data searched, its credibility, etc.).

The basic skills (and equally tasks) expected from information professionals include advanced browsing competencies [11, 12]. The modern *medical librarian* needs to be versed in the content and formal diversity of electronic resources in the field of medical and related sciences, including repositories and database containing e.g. research reports, full texts of articles, information on clinical trials, health technology assessment, etc. They must know artificial (information-retrieval) languages used to describe collections in order to be able to find the most accurate answers to the questions posed; use ad-

vanced search tools, in the formulated queries combining all the essential features of the desired information [13]. In view of the specific needs of users – doctors, nurses and other members of the health care team – whose work requires a specific, rapid and reliable response, scarcely ever do they prepare bibliography lists or supply full-text articles. More and more often, though, they provide literature reviews of various profiles (*scoping reviews, evidence reviews*), results (*rapid evidence assessments*), records of health policies, etc. [14] carry out bibliometric and webometric analyses [15], focusing on providing precise data corresponding to equally precise questions. Carrying out such actions – expert search, analysis and evaluation of its results – also requires knowledge and proper application of adequate research methodology. This content, i.e. the network of specialist information resources ('medical Internet') and the methodology of specialist search are also the most commonly reported training needs of information professionals [e.g. 16].

In addition to information retrieval and results analysis, the group of the most important and most frequently undertaken tasks includes educating users in the field of information literacy [11–13, 17, 18]. Its implementation requires both constant updating of knowledge sources and search tools, as well as competencies within the specific area of teaching adults – an effective transfer of knowledge, most frequently in rather uncomfortable circumstances (taking into account for example the lack of time, difficulty in arranging classes, disparate needs of different groups of employees, some user-unfriendly search tools). Nevertheless, people working in health care must be familiar both with current and valuable sources and with how to properly use them. Teaching information literacy refers not only to health workers or students (in academic institutions), but also patients – especially in hospital libraries.

Information staff teaching more and more often includes the issue of intellectual property protection and recognition of copyright because of the diversity of legal types of content sharing, especially on the Internet. Tasks related to the popularization of the Open Access movement also include helping authors to publish research results, organize and maintain institutional repositories containing either text or raw research data [19], and even carry out publishing activities (e.g. preparing and publishing grants reports). They come under the area of activities related to knowledge management, a responsibility of information professionals, and include the documents related to the functioning of the institution, collecting and sharing publications of their own authors (keeping repositories, mentioned above), data management (bioinformatics, research) and metadata, as well as cooperating in developing domain and inter-institutional [20] resources or promotional actions.

Both education and Internet activity require soft skills, which include exceptional competence in the area of interpersonal communication, requiring not only the knowledge of certain techniques and behaviours, but also certain predispositions [11, 12]. This ability is essential in working with the user, in an effective and swift clarification of their information needs, as well as in building the authority of the information employee as a person competent in retrieving and evaluating the knowledge available on a given subject [13].

In many cases, leadership skills prove to be significant, including entrepreneurship (in view of constant financial difficulties), innovation and creativity in the search of new solutions in many areas of information activities [21]. These – in tandem with communicativeness and awareness of new technologies – are useful in managing sites and portals of the library and the parent institution, including specialized portals dedicated to selected health issues or offering information for patients, as well as social media profiles [5].

Librarians and information professionals adapt their functions to the overall strategy of the institution, more and more often becoming partners in the implementation of research and treatment tasks. Having skills that help precisely formulate the subject of the planned research, write grant proposals, prepare literature reviews and identify data gaps, they form part of research teams. For example, such are the responsibilities of information professionals working at the Biomedical Library University of California in Los Angeles [15]. Employees of hospital information departments are full members of care teams, not only taking part in staff meetings, but also being present in the wards almost all the time. They participate in doctors' rounds and daily patient care, ensure the precise naming of information needs, and carry out information searches almost at the bedside [8, 10, 15]. Given the observed trend of personalized medical procedures, visible i.a. in the individual selection of drugs in cancer treatment based on the results of genetic testing, they mediate in finding and delivering the necessary data [22]. They provide information to the patients in a manner appropriate to their level of health information literacy.

This significant change in the role of information professionals in the structures of health care institutions, their partner contribution to the implementation of the institution's key functions (education, research, clinical care), follows directly from the execution of the *evidence-based healthcare* approach, strongly emphasizing the decisive influence of the latest available knowledge on the implemented therapeutic measures. The level of commitment is reflected in the terminology used – observed primarily in the work of the above-mentioned *embedded librarian*, completely 'immersed' in the issues that 'his' or 'her' users deal with on an everyday basis.

Such an active function in the team means that another very important competence of information professionals is their ability to cooperate – initiating and maintaining contact with users, going out of the library, being present wherever there is need for information [10], being responsible for interinstitutional contacts, direct and mediated (network) communication. In the United States the catalyst for a greater involvement of librarians in research activities in the field of medical and related sciences may have been the introduction of the policy of the dissemination of public access to information (including scientific research results [4]) by the National Institutes of Health in 2008.

The process of improving and updating the professional competencies of information employees is often confronted with barriers, such as the lack of a matching information offer, or lack of time or resources for training [4]. One way to cope with the lack of time, made possible by technological solutions, is the elimination of jobs that have ceased to be crucial for effective information activities. These include: providing information services (since the employees are directly involved in research or care), maintaining printed collections, cataloguing (since descriptions can be transposed) [4].

Studying the competencies and learning needs of medical and related information professionals

Both information employees themselves and information scientists, noticing changes in intensity and the manner of implementing information services in the health sector, carry out research projects whose aim is to monitor the competence with respect to the needs of the supported communities. Below are some interesting examples illustrating the issues that are being dealt with.

The purpose of the British research [23] into the training needs of public health (NHS) librarians was to analyze both examples of good educational practices addressed to this group of recipients, as well as guidelines for the design of the Lifelong Learning Programme, to be implemented by the National Library for Health. The priority needs included: specialist browsing and research skills, knowledge management using ICT and research needs of users, leadership and strategic management. There was also reference to the then relatively new (2005) roles and ways of working of clinical librarians operating partly outside their unit, ward, or in the field. They were above all involved in searching and evaluating literature, contacts with the user, conducting training, use of ICT and network resources in information activities, but also research, among other things. Moreover, they helped users to solve dilemmas related to data protection and compliance with copyright law, while retaining the right to information. They managed their subordinates, introduced changes, led marketing and promotional activities, communicating with patients and the social environment [23, pp. 15–16].

As a result of this project we identified 4 basic expected learning outcomes of future information professionals:

- establishing and maintaining cooperation between different departments, improving (changing) services, project management, promotion and evaluation of services addressed to new user groups;
- finding educational support for various professional groups, including e-learning packages, knowledge resources; assessment competence and ICT;
- supporting scientific research: its design, choice of methodology, implementation and critical evaluation;
- supporting initiatives in the field of knowledge management and intranet development [23, pp. 16–18].

Looking at a narrower group of respondents also working in libraries associated with the NHS and limited to the British region of the Thames Valley, it was studied [9] whether (and to what extent) people educated in an area other than medical sciences and health sciences and holders of a library science diploma (Master degree), can successfully work in the health sector.[2] So education and training needs of librarians educated in the area of science as well as humanities and arts, and also people working in the health sector and in higher education establishments, were compared. Constant changes in health sciences and nursing practice have proven to be the cause of the significant demand for various forms of lifelong learning, especially in terms of teaching skills, researching information needs, management and marketing, research skills, subject knowledge and specialist terminology. When asked, medical librarians identified the most urgent training needs as follows: focusing information services on the patients' needs (including improving their safety, monitoring health outcomes), functioning in the event of significant inequalities in access to health information in the field of public health, as well as research and browsing skills [9, p. 169]. As shown in the list above, medical knowledge and care have not proven to be a priority competence. The listed needs may, however, be reflected in the amended science information educational programmes, which include expert browsing skills, education of adults, project management, research methodology and many hours of practice – especially for students holding a bachelor's degree in areas other than science [9, pp. 174–175], since this last group is much better skilled at counting, statistics and analytical tasks.

An atypical example of librarian responsibilities was described by Niamh Lucey and Anne Madden of St. Vincent's University Hospital in Dublin [24]. They showed that librarians have unique specialist skills useful in clinical audits, especially in the implementation of the first two stages, i.e. the recognition and naming of the problem / issue being examined and the determination of the evaluation criteria. The Head of Library & Information Services of the same hospital and one of its employees have been full members of the audit team from the beginning, that is since 2005, and have participated in the process as such. Therefore, librarians' expertise in the field of the search process contributes to improving the condition of the patients [24, p. 3].

Questionnaires and focus group interviews with Canadian librarians participating in research, the so-called *research-embedded health librarians* (REHL), was used [25] in order to learn the specifics of this position. The responsibilities of this type of employee include the implementation of information services in the research team working in the area of medical and/or health sciences, of which they are a full member [25, p. 288], including ongoing orientation in the current available publications on the topic, literature search, analyzing it and formulating proposals, participation in team meetings. Besides, they can e.g. manage the project (and its budget), maintain a website, prepare grant applications [25, p. 289]. They should be able to use the research methodology and ICT tools, prepare written statements in different genres and forms. Their personal qualities should include: comuni-

cativeness, the ability to adapt, meticulousity, ability to work under stress, cooperation, network competence, and also independence [25, p. 292]. Respondents have proven to be satisfied with their assigned duties, mainly with belonging to the research team and being committed to an ongoing project throughout its duration, with the possibility of establishing relations with other team members. At the same time, though, their feeling was that they were working rather like researchers than librarians, and complained about the insulation of their original occupational group, as well as the relatively low job security, resulting from its 'project' character.

The Health Association Libraries Section of the Medical Library Association at various time intervals (1980, 1996, 2003, 2011) has been testing a small group of libraries, medical societies, checking their condition and the pace and direction of their evolution [26]. In the last edition, it included the following new emerging tasks: archiving of publications of the home society and information activities in this area, help in editorial and publishing activities for the members of the organization, maintaining electronic documentation and website, participation in marketing.

Academic training of information professionals in Poland

Academic education of future information employees in the field of bibliology and information science, is currently (2015) conducted by departments or institutes at universities in Krakow (two), Torun, Katowice, Wroclaw, Lublin, Lodz, Kielce and Warsaw. Despite recent higher education reforms, courses of study offered at undergraduate and graduate levels are not predominantly referred to by the former name of 'scientific information and library science' (in several variants), but other courses are offered, such as: information architecture (Pedagogical University, Krakow; Nicolaus Copernicus University, Torun; Maria Curie-Sklodowska University, Lublin), information management (Jagiellonian University, Krakow; Nicolaus Copernicus University, Torun), scientific information and library science (University of Silesia, University of Warsaw, Wroclaw University) and digital and Internet publishing (University of Wroclaw). Nevertheless, graduates are taught key competencies to work with information, such as the efficient search for information in various types of sources and resources using advanced tools, the use of modern technologies, creating digital documents and collections, testing and implementing users' information needs, science communication. These are skills usable in different types of information establishments and at work with clients representing different types and areas of activity.

However, issues directly linked to information processes accompanying research and health care practice [6] are difficult to be found in educational programmes. Specific issues relating to bibliotherapy, which have for years been the characteristic specialization of the educational offer at the Institute of Scientific Information and Bibliology at the Nicolaus Copernicus University in Torun, can be an asset, for example, in information services offered to patients, including people with specific health problems and the elderly. They form a good basis for the development of domain knowledge required in medical libraries. At the Institute of Scientific Information and Bibliology at Warsaw University there are some optional courses addressing the issues of health: Health Information (undergraduate) [27] and Information Health Competencies (graduate level) [28]. The aim of the latter is to introduce students to the broader issue of health information and carrying out research projects on these particular competencies among different groups of users, or possibly another aspect – of the availability and quality of health information created or distributed by different entities.

In 2009–2010 the same Institute came up with the idea of post-graduate studies in the field of health information management, the aim of which was to teach information literacy to graduates of other fields of study, especially those related to the area of medical sciences and health sciences. In this project, the division of knowledge, skills and attitudes that should be obtained by the potential graduate was applied, including i.a.:

- the necessary knowledge of the specificity and complexity of the health system that affect the diversity of information needs of multiple groups of users (people of different professions, patients, the wider public);
- specialist knowledge of linguistic tools: domain classification of subject, information retrieval languages, ontology;
- the capability of finding, evaluating and selecting sources and information, regardless of their form or medium;
- analysis of the material obtained and the preparation of applications, summaries, statements or other replacing documents;
- self-preparation of Internet materials, including the maintenance of websites;
- trainings for different groups of users and preparation of customized information materials [29].

Unfortunately, this project was not implemented due to the low interest of potential participants. Although the offer was directed not only to medical librarians, but also to people connected with the sphere of administration in health care or with health policy, it failed to attract the sufficient number of people. Perhaps educational needs in this area are not yet strong enough. Among librarians these practical skills are probably developed and improved by mentoring or participation in the so-called *communities of practice* – ranging from simple tasks to those with a higher risk due to the patient's welfare and quality of clinical studies [6, 13, 18]. A good educational support, especially at the beginning of career, can also be provided by the textbook in teaching health information skills, resulting from a joint Polish-Norwegian project [17].

It is to be hoped that the information staff working in the field of health care will be improving their information and domain skills to match the changes in their environment. Perhaps also in Poland and in the foreseeable future, precision in naming information needs, efficient search for information, together with the ability

of its evaluation and selection, the efficiency of creating digital documents and collections, communication with employees and patients through a variety of media and channels, will make that information professionals will be – like in foreign teams – partners in research projects or patient care practice.

Notes

[1] See References.

[2] In Great Britain, studies in the field of scientific information and library science (LIS – library and information science) are conducted mainly at the graduate level, as an extension of first-degree studies completed in an area of other sciences.

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