Generalism as a cross-disciplinary praxis in medicine: a mixed studies systematic review

Abstract

Background Medical 'generalism' is currently in vogue. However, its meaning and application across disciplines remain unclear. A cohesive cross-disciplinary understanding could inform future healthcare organisation and practice. This calls for a more explicit portrayal of generalism as enacted in various medical disciplines.

Aim To characterise who, according to current best evidence, a generalist is and what they do.

Design and Setting Mixed methods systematic review spanning national contexts and clinical disciplines.

Method We searched Medline, Psycinfo, SocINDEX, Embase, Ovid, HealthSTAR, Scopus and Web of Science for empirical studies reporting generalist physicians' attributes and then extracted, analysed, and narratively synthesised relevant findings.

Results: Two hundred sixty-two studies from 25 countries met inclusion criteria. Forty-seven percent of studies lacked essential data about participants. The remaining studies primarily equated generalism with a lack of specialist training, which we refer to as a 'deficit model'. We identified four archetypes of generalist praxis: 1) possessing broad knowledge and applying it in 2) adaptive, 3) integrative, and 4) interpretive ways.

Conclusion These four characterisations advance the conversation about generalism from a crude dichotomy between specialists and generalists to a spectrum of types of generalist practice. Re-characterising generalism in this manner can inform future collaborative and unified systems of healthcare praxis and education.

Keywords: Generalism, generalist, general practice, family medicine, systematic review, workforce.

How this fits in:

This review brings together international empirical literature about generalism and generalists in clinical practice. We generated a typology of different models of generalism. It is, by definition, a broad-ranging approach to practice, but this review offers a new appreciation of the commonalities and differences of generalism across clinical disciplines, to support future policy, clinical practice, and education.

INTRODUCTION

A robust workforce of medical generalists has been described as 'the backbone' or 'cornerstone' of any public health system.[1] Traditionally, general practitioners (family physicians) were the quintessential generalists.[2, 3] However, generalism is increasingly endorsed beyond family medicine[4, 5] most recently in the NHS workforce plan.[6] Recent debates about the role of artificial intelligence (AI) and technology in clinical practice and education have strengthened the case for generalist contributions to hitherto 'specialist' clinical practices.[7, 8] This extends generalism beyond family medicine to become an evolving, boundary-spanning praxis.

Generalism is, however, an elusive concept. Generalism has been variably defined as 'a philosophy of care'[4] encompassing many elements, including the importance of the doctor-patient relationship, portrayal of the whole person in the context of his or her family and environment, continuity and coordination of care, and consideration of prevention and health promotion[9] or, more simply, as 'whole-person care.'[10] Existing definitions, have not, however, helped articulate the crux of generalism.[11] A recent narrative review of international policy and mission statements spanning both family medicine and specialties found wide variation in how generalism is anchored (expertise vs foundational knowledge) and advocated for movement beyond mission and policy ambition towards efforts to embed generalism in practice.[12]

This review addresses a key challenge in Wass et al's seminal inquiry into the challenges facing undergraduate general practice, which urged readers to demystify the term generalism.[13] Given endorsement of generalism as a broad praxis[6, 9, 14, 15] and following initial stakeholder consultations across a variety of UK and Canadian disciplinary experts, we were keen to look not only at Family medicine but also at other medical disciplines. We aimed to expand/extend our understanding of what we mean by generalism in medical practice, to treat generalism as a future-focused emergent practice that spans clinical disciplines rather than locate it in definitions that emanated from the status quo. Accordingly, we set out to identify, describe and synthesise characteristics of generalism as reported by physicians from an eclectic range of clinical disciplines to answer the question: How do empirical texts characterise a) Generalists (people doing generalist work) and b) Generalist praxis (work)?

METHOD

The study team consisted of family physicians (MK, SP, AR, SS), a medical student (AS) and research assistants from Canada and the UK. We worked with patient partners at preparatory and analysis stages of the project to inform our approach.

Theoretical orientation

We used hermeneutics, the theory and practice of interpretation to inform analysis. Hermeneutics allowed us to assume that no definition could be an objective, knowable structure and that we should 'peer behind language'[16] used to discuss generalism. We should find 'shapes that language takes around words' [16] or contingent meanings. Hermeneutic theory framed our task to explore the 'fecundity of the particular'[17] and find new 'ways of seeing' generalism.

Study design

Our systematic mixed-studies review (SMSR) design used a qualitative and quantitative evidence synthesis methodology to develop a rich understanding of generalism's complexity.[18-21] The study protocol was published[22] and registered with the International Prospective Register of Systematic Reviews (PROSPERO) (ref: CRD2020186935).

Search Strategy We searched Medline, PsycINFO, SocINDEX, Embase, Ovid HealthSTAR, Scopus, and Web of Science. Search terms included 'generalism,' 'generalist,' and terms representing general practice. To ensure that generalism within specialties was represented, we combined search terms for generalism with 'internal medicine,' 'surgery,' 'pediatrics,' and 'psychiatry". (Supplementary Box S1) Table 1 reports inclusion and exclusion criteria. We piloted several searches, which yielded several thousand articles. We restricted the search to English-language and empirical studies to make the study manageable within available time and resources. Having previously identified a repetition and re-rehearsal of theoretical imperatives and definitions for generalism,[12] we sought to generate practical and theoretical insights from empirical papers about practice to support future policy and change, rather than describing how existing theory suggests it *should* be done. This focus on empirical studies helped to develop a broad understanding of diverse clinical practice. We entered the results into an Endnote library

Table 1 Inclusion and Exclusion Criteria

Criterion	**Inclusion**	**Exclusion**
Time period	1999 +	1998 or before.
Language	English	Papers not written in English
Type of article	Empirical study: quantitative, qualitative, mixed-methods, and systematic reviews	Conceptual papers, policy papers, conference abstracts, theses, books, general discussions, or letters
Study focus	Clinical practice	Education, e.g., reports of placements, educational programs
Population	Physicians in primary and secondary care practice	Other healthcare professionals such as nurses, social care workers, midwifery, pharmacy

Study selection and data extraction
Two reviewers independently reviewed abstracts. Items were included if they made explicit reference to 'generalism' or 'generalists'. Limitations of this approach were discussed with stakeholders and PPI. We recognise that other relevant concepts might have been included in papers which did not use these terms. However, characterisation of these terms was the focus of this review, and these inclusion criteria still generated a large amount of relevant data. The full text was retrieved if both reviewers could not reject a title or abstract with certainty. Next, two reviewers independently reviewed the full texts and discussed discrepancies with the team to reach a consensus on inclusion/exclusion.

Quality Assessment
Since our main aim was to review conceptualisations of generalism rather than empirical findings, we followed a precedent set by earlier researchers [19] to include all relevant articles, irrespective of the strength of their methods.

Data extraction and Synthesis
We used a template to organise and manage extracted data, and compiled tables describing study characteristics. To identify and describe generalists, in keeping with our interpretive approach, we included studies where the terms generalism and generalist were used by paying attention to the stated and implicit meaning. We adopted a heuristic that regards linguistic expressions as having two aspects: 'intensions' and 'extensions'.[23] Intensions are attributes, characteristics, ideas, or properties that a concept implies or suggests; extensions are objects (or class of objects) that a word or concept applies to.[23, 24] To include a study, we required it to have either stated a substantive feature of generalism, specifically connecting this to generalism (e.g. "generalism involves patient-centred care"), or provide a clear example of generalists (e.g. "generalists are general practitioners (GPs) and other primary care physicians").

We used a convergent design to synthesise quantitative and qualitative study findings,[25] analysing qualitative and quantitative data separately before integrating them,[19] then bringing the two into conversation with each other by representing quantitative data qualitatively. We did this by interrogating the data with questions such as: Who does this study involve? Who is described as a generalist? What is the overarching aim of the study? What characteristics of generalism are described? We identified key themes of qualitative studies by discussing them as a team, constantly comparing our interpretations against original reports. We also searched the data for convergent and discordant data. To integrate the findings, we developed: a) descriptive themes, which took account of similarities and differences across datasets; b) analytic themes, resulting from an interpretive synthesis of perspectives on generalism present in the data.[26] We held monthly data clinics to familiarise ourselves, immerse ourselves reflexively, and agree a final interpretation of the dataset.

RESULTS

Description of dataset

Of 6541 papers identified, 262 entered the final analysis (Figure 1). Supplementary Table 1 details the aims, contexts, and participants (if known) of included studies; Table 2 summarises their geographical locations and study designs. Most were quantitative: their methods included surveys (86 studies), retrospective reviews of administrative data (78), prospective cohort studies (11), and statistical or economic modelling (9).

Figure 1 PRISMA Flow Diagram

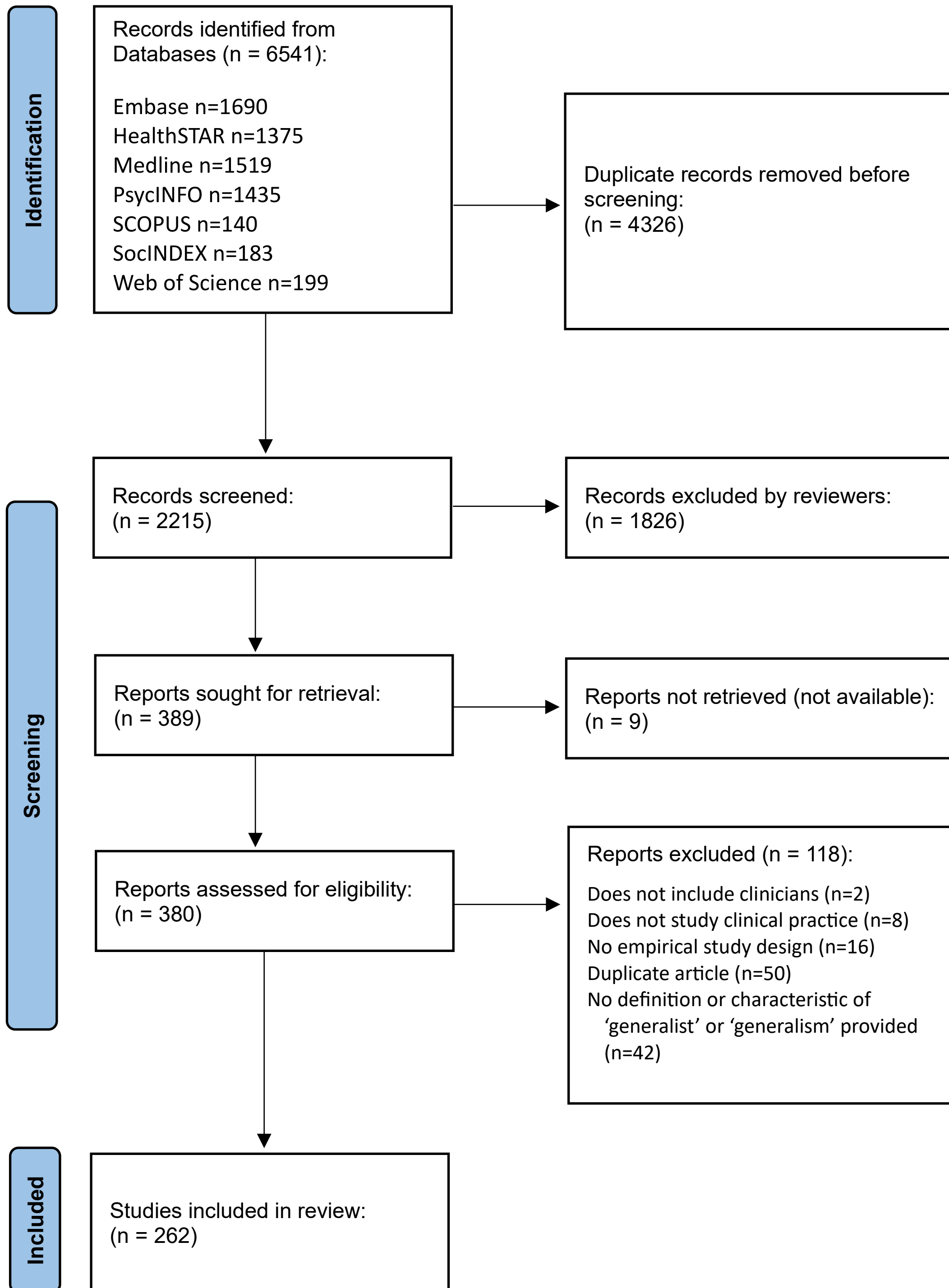

Table 2: Studies included by geographical location and design

Country	Total number of studies (%)	Quantitative study	Qualitative study	Review article	Mixed methods study	Other study type
Asia	9 (3)	7 (3)	2 (6)	0 (0)	0 (0)	0 (0)
Australia & New Zealand	16 (6)	8 (4)	3 (9)	4 (31)	0 (0)	1 (25)
Canada	24 (9)	17 (8)	5 (15)	1 (8)	0 (0)	1 (25)
Europe	20 (8)	12 (6)	5 (15)	2 (15)	1 (17)	0 (0)
Other country	9 (3)	6 (3)	2 (6)	0 (0)	1 (17)	(0)
USA	162 (62)	150 (73)	3 (9.1)	5 (38.5)	3 (50)	1 (25)
UK	22 (8)	6 (3)	13 (39)	1 (8)	1 (17)	1 (25)
(Total)	**262**	**206**	**33**	**13**	**6**	**4**

* Three studies were conducted in three or more countries[27-29]

Clinical Disciplinary focus

One hundred and ten studies investigated generalism and generalist practice in medical specialties. Several additional studies crossed generalist and specialist boundaries by addressing career characteristics or medication use. Nearly half the studies included disciplines other than family medicine including: cardiology (24 studies), women's health including obstetrics/gynaecology (19), pulmonology (14), paediatrics (14) and infectious disease (13). Surgical disciplines included General Surgery (2 studies), Otorhinolaryngology (7) and Orthopaedic Surgery (5). (Supplementary table 2).

Descriptive Themes

Two broad descriptive themes - comparison and collaboration (Table 3) – were strongly represented. *Comparisons* justified one approach against the other, often by referring to recruitment, working conditions, remuneration, or other workforce issues. The *collaboration* theme referred to the need for better communication, teamwork, and cooperation in both generalist and specialist practice.

Table 3 Descriptive themes by study type

Study type (and number)	Themes
Quantitative (n=206)	- Compared generalists and specialists on metrics such as the adherence to protocols of management plans, medication use, and single disease-based outcomes. - Most data came from surveys, cost comparisons (using medical claims data), or retrospective chart reviews. - Studies comparing disciplines by describing workforce issues such as recruitment, renumeration, retention, academic output.
Qualitative (n=33)	- Viewed generalists as negotiating decisions with patients and their families. - Emphasised continuity of care, patient advocacy, and the broad knowledge of generalists. - Focused on boundaries, including who bears responsibility for a patient's care. - Discussed ethical issues such as availability and access of services in relation to evolving clinical domains e.g., genetics
Reviews (n=13)	- Compared generalists and specialists. - Advocated better understanding of how specialists and generalists could work together e.g., by clarifying areas of competence or examining models of care.
Mixed methods (n=6)	- Compared knowledge between generalists and specialists. - Suggested need for generalist and specialist services to be integrated. - Generalists key to providing service in areas with limited access to specialists. - Generalists providing continuity of care and sustaining personal relationships with patients.
Other study types (n=4)	- Emphasised context (e.g., the needs of specific communities, cultures, and the historical structuring of health system) to explore how to develop appropriate models of care: e.g., providing effective, high-quality health care in rural/remote areas. - Supported better alignment between specialism and generalism care to integrate care.

Analytic Themes

Characterising a Generalist

122 studies (47%) did not clarify what they meant by generalism or generalist participants. 139 studies (53%) provided more detail: 71 identified participants' overarching disciplines, e.g., family medicine or general internal medicine, of which 68 specified subdisciplines as generalist (e.g. general cardiology, general pediatrics). Ninety studies defined generalists by deficit: physicians who lacked specialist training. Twenty-three articles reported specific attributes of generalism as: providing holistic care; knowing patients' personal situations, continuing relationships.

Archetypes of generalism in praxis

We identified four archetypes of generalist praxis, each emphasising a different dimension of generalism, but not mutually exclusive (Table 4).

Table 4 Archetypes of Generalist Praxis

Archetype	Description	Illustrative quotation	Additional examples	Implication
Generalism as breadth of knowledge	Generalist praxis was represented in most papers as practicing from a broad knowledge base. This perspective was dominated by studies from the US. This type of generalism was practised by physicians working in general internal medicine, general paediatrics, or general surgery in community or hospital settings. This literature identified a broad range of 'generalist' specialties, for example, generalist cardiology, generalist radiology, generalist neurology and others, whose practitioners have broad system-specific knowledge. This group of generalists tended to solve problems by using programmes of clinical investigation that supported a deductive type of reasoning. Articles reported comparative outcomes as correct or incorrect adherence to guidelines, length of hospital stay, or evidence-compliant prescribing. Articles written from this viewpoint often concluded that knowledge deficits led to suboptimal practice.	These results indicate that, for optimal management of patients with certain diseases for which practices are evolving rapidly, especially in high-risk groups such as pregnant women, it would be better to include consultation or continuing involvement of specialists… It is necessary to develop and implement strategies that will increase physician knowledge on thyroid and pregnancy among generalists and subspecialists so that their practice patterns would adhere more closely to the published guidelines.[30] This study reveals a deficit in generalist physician knowledge about sleep medicine and a large gap between generalist and specialist attitudes concerning the diagnosis and management of sleep disorders.[31]	[32-39]	Where knowledge is positioned as 'basic', this creates power imbalances between generalists and specialists. There is a tension between generalism as 'breadth of knowledge', where knowledge is defined in biomedical terms and when knowledge is conceptualised in relation to its implementation as more holistic, and inter-relational, to integrate social determinants of health, knowledge of the patient's family, and community context. Where methodologies focus on measuring a particular disease or speciality specific criteria, the expertise of generalist practice is unlikely to be made visible. Rather it reinforces the dominance of speciality knowledge as measured by speciality-orientated criteria. Recognising the diversity of ways in which generalist knowledge is understood, could be articulated more explicitly.

	Generalism was characterised in terms of the presence or absence of knowledge. Deficits could be remediated by filling knowledge gaps.			
Generalism as adaptive expertise	This group of papers characterised generalists as having adaptive expertise. Generalists were typically family physicians with additional training, such as surgery, obstetrics, and diabetes care. It could also include specialists working in primary care, who evolved their practices e.g. developing expertise in HIV care. This added expertise was often acquired to address service deficits in response to population health needs. These generalists worked, for example, with specific populations or in rural settings. The focus was often on bridging the divide between primary and secondary care provision, filling a gap resulting from the absence of specialist care, or acquiring specialist technical skills.	Throughout much of rural Canada, surgical services have historically been the domain of general practitioners (GPs) with enhanced skills in low-risk surgical procedures.[40]	[41-45]	Adaptive expertise spans disciplines. Emphasising generalism as adaptive expertise e.g. in response to managing multimorbidity, offers a collaborative space to promote generalism across disciplines. e.g. exploring contextual [46] variation with learners e.g. patient care in (home, clinic, hospital, urban, rural, financial) could showcase the relevance of being adaptive, and integrating generalist principles in different disciplines
Generalism as integrative expertise	This archetype equated generalism with family medicine in North America (or general practice in the UK and Australia). It was also seen in studies examining the role of hospitalists and in disciplines such	Provision of comprehensive and continuous care to better manage chronic conditions and promote healthy lifestyles within their patient population. Trusted health care providers act as a resource for	[47-51]	Showing how all disciplines can work together to counter fragmentation of care e.g. scheduling related specialist appointments on similar days of the week, communicating across

	as geriatrics, palliative care, and to a lesser extent in primary care disciplines in the US, where community-based doctors working in internal medicine or paediatrics. Much of the focus is on care co-ordination. Studies examined, for example, the role of teamwork, communication practices between primary and secondary care interfaces and how to coordinate care. This praxis integrated the specialist care of biomedically defined domains of ill-health into patients' social contexts. It was also oriented towards wellness (and prevention), assimilating features of specialisms into a holistic approach to care.	information and a gateway to additional care when needed.[47]		disciplines- simply copying each other in on clinical updates for a patient, updating each other on significant patient care issues.
Generalism as interpretive expertise	This fourth analytical category draws on studies that emphasise interpretive medicine as the key to generalist care. Such expertise is well represented in family medicine literature, particularly from the UK, and emphasises relational continuity as a feature of inductive problem solving and care. Interpretive generalism is relational and intersubjective, a hermeneutic practice. This literature focused on care processes such as services for minority populations or populations	Continuous investment of working in the same practice over an extended period in order to gain the historical contextual knowledge they felt they needed to work as an expert generalist.[11]	[52, 53]	This expertise relies on an immersion in the patients' lifeworld, where a deep relational understanding supports bearing witness, intuition and interpretation of subtle cues. Expertise is achieved through providing person-centred care and working with patients to negotiate when, how and if to select and deliver care at particular moments.

	who had difficulty accessing care or the application of generalist expertise using interpersonal communication in longitudinally sustained relationships over time.			These forms of knowledge were most evidenced in papers using qualitative methodologies, which were able to explore and examine elements of practice in generalist settings.

Synthesis: 'Ways of knowing' informs 'ways of doing' Generalism

Our four archetypes reflect a dialectic between different paradigms of generalism as portrayed by researchers (Table 5 below). Most articles were comparative, treating specialism as the norm or 'gold standard.' Quantitative studies, predominantly from the US, orientated towards bio-technical, disease-orientated care, accorded specialism this dominant position. Where studies constructed generalism as a legitimate and/or alternative model of care, studies tended to be more qualitative or exploratory in nature. This smaller dataset, primarily from the UK and Europe, constructed generalism as a complementary but different practice, characterised by a more interpretive, socially constructed approach, emphasising holistic approaches, prevention, and health promotion and being part of a community.

Researchers' use of the word 'complexity' illustrates how two such different narratives were constructed. When generalism meant having broad knowledge, patients were 'complex' if they had severe biomedical diseases, each requiring sub-specialist expertise. When complexity was situated in a social context, generalism meant being capable of integrating biology with biography, managing multimorbidity, and applying both broad and deep knowledge to the care of individual patients.[52, 54] This required ecological awareness of who individual patients might be and the communities they came from.

Similarly, 'education' was positioned differently within these archetypes. Where a 'basic' typology was used, education tended to be proposed as discrete interventions to address knowledge deficits or gaps. In contrast, integrative and interpretive generalism positioned learning as more integrated within workplace learning. This shifted educational expectations from a one-off event (e.g. a course or module), to a more intertwined, on-going and dynamic activity embedded within clinical care and organisations. This has implications for educational approaches and patient partnership within clinical learning.

Table 5 Differing approaches to generalism and generalists

Characteristics	Generalism as basic (deficit model)	Generalism as integrative (attribute model)
Axiology	Knowledge extension by acquisition	Knowledge expansion as a virtue, holism.
Ontology	Reality is 'out there' (specialists know more, e.g. depth or detail)	Meaning is created through interactions and socially situated (expertise is here 'in the room')
Knowledge	Discipline-specific 'basics' Deductive problem-solving	Knowledge is relational, contextual, inter-connected

	(e.g. complexity as severe biomedical disease)	and its implementation adapted in different contexts. (e.g. complexity as integration of bio-psycho-social aspects of care such as multi-morbidity)
Types of studies	Comparative focus on outcomes. Where available, description of generalists ‘in relation to’ specialists	Exploratory and explanatory focus: inductive, qualitative ‘making visible’, mixed methods. Studies focus on emergence, care processes, patient perspectives, and affirmative attributes of generalists.
How characterised	Deductive, compartmentalised. Deficit model of education. Measurement and attainment of additional specialist knowledge. Generalist relinquishes responsibility with specialist expert referral.	Contextual and integrated. Orientated towards wellness and prevention, holism, longitudinal relationships and growth. Understanding expertise of implementation. Generalist retains responsibility integrating biology and biography (knowledge of patient and ecology)
Recommendations	Address ‘knowledge deficits’ using compartmentalised, reductionist, discrete teaching components. Territorial tussles and competition.	Workplace-based and patient-based learning is contextualised. Shared experiential knowledge (e.g. mentorship). Collaboration and cross-disciplinary learning.

DISCUSSION

Summary

Our review highlights a counterproductive tension. Authors applied the terms generalist and generalism to disciplines whose different epistemologies influenced how generalist practice was enacted, researched, and valued. Whilst acknowledging that generalists and specialists should collaborate, generalism was usually constructed as an inferior practice rather than an alternative, skilled approach to care. This ‘deficit’ discourse privileged advanced training and biotechnical

expertise, which specialists had but generalists lacked. To advance generalism as a collaborative way of working that spans epistemological boundaries, we identified four archetypes of generalism: as knowing, adapting, integrating or interpreting.

Strengths and limitations

The body of empirical evidence is broad, and our inclusion of mixed study methodologies enriched the synthesis, particularly for end-users seeking to understand the variation and complexity of generalism rather than condense complexity down to definitions.[21] SMSR methodology allowed us to triangulate quantitative and qualitative approaches to the central phenomenon of interest, increasing our findings' validity.

The nature of research that has been published and our methodological focus limited the scope of the review, inescapably. Our focus was on empirical research into generalist practice, to the exclusion of commentaries, theoretical articles, and research into clinical education (e.g., workplace learning) Further, we only included articles in the English language.

An alternative to our interpretive approach would have been to use an a priori definition of generalism as a benchmark to judge whether studies should be included. Many existing definitions are embedded in family medicine, which has been the epitome of generalist clinical practice[3], but generalism is changing. We purposively restricted the dataset to papers from medical disciplines, excluding allied health professions. Given their rapidly expanding contributions to healthcare, a review of those other clinicians' approaches to generalism would usefully complement our work.

Comparison with existing literature

The tendency to construct generalism as a practice that lacks scientific knowledge or skills has been noted in previous publications, primarily from the US.[55, 56] This contrasts with the scholarship of family medicine, which constructs generalism as expertise in inductive, interpretive work.[11, 57, 58] Given that generalism is sometimes situated in very specific social contexts, variation in its praxis according to need is inevitable, indeed desirable.

Broad knowledge is the foundation stone of generalist expertise. Conversations about 'ways of knowing'[59-61] have acknowledged however, that knowledge can exist in different ways – from objective, to more subjective, embodied and interpretive. The ability of generalists to adapt to local contextual needs is embedded in several definitions of generalism. For example, the Royal College of Physicians and Surgeons[4] advocated for the breadth of generalist practice to meet community needs, as did the UK King's Fund.[62] The COVID pandemic highlighted that the flexibility conferred by generalist training is a prerequisite to the re-deployment of physicians, as envisaged in the new NHS workforce plan. [6]The need for adaptive expertise, for example to respond to rising rates of multimorbidity, also creates a space for cross-disciplinary generalism.[9,]

[63] Generalist disciplines are needed to integrate patient care in the face of fragmented services, particularly for patients with chronic disease. This type of generalism is exemplified by, for example, trends in paediatrics, care of the elderly, respiratory medicine, and cardiac care. Thus, whilst generalism is primarily attributed to family medicine, as a philosophy of praxis, its value, and opportunities for expansion, can be found across different disciplines.

Implications for research and practice

The main implication of this work is that our proposed archetypes provide an adaptable alternative to traditional definitional approaches to generalism, inviting generalist physicians to explore the nature of generalism in their discipline and daily work. Our framing of generalism as a praxis in its own right puts an appropriately positive gloss on a core type of medical work, which could benefit the recruitment and retention of generalists. There are implications for scholarship too: to build robust models of generalism for the future, we need to articulate generalist knowledge in expansive and emergent ways that suit situated, team-based and interdisciplinary working. Our archetypes offer 'a world not of propositions but of practices'[64] which signify generalism as a constellation. In doing so, we create an action space where different disciplines have agency to transilluminate generalism from their diverse narrative positions. Future research should attend to/be mindful of the methodological strengths and limitations (highlighted in this review) which each approach (e.g. comparative or qualitative) provides for making generalism visible and producing knowledge claims about generalist practice.

Conclusion

'We learn who we are in practice, not in theory.'[65] To support generalism as a philosophy of care, we need to disentangle it from the crude dichotomy that contrasts it with specialism.[15, 66] Focusing on what generalists do, 'knowing, 'adapting,' 'integrating,' and 'interpreting' by drawing on pragmatic examples from a diverse scientific literature provides opportunities to clarify generalist expertise in contemporary clinical practice.

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