

Evaluation of current situation in career development and training of teaching physician

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Abstract

Background: Extreme competition for grant funding or publications to gain career promotion in affiliated hospital has outsized negative effects on doctor to gain career promotion in China these years. This research seeks to explore the relationships between evaluation of teaching physician and their actual aptitude towards career promotion.

Methods: This study was offered to all teachers and medical students at Shanghai General Hospital affiliated to Shanghai Jiao Tong University. A web-based survey was conducted to identify individuals' aptitude to teaching physician. A total of 140 participants entered and finished the study. Questions consisted of how teaching physician is assessed, the percentage of clinical, scientific work and teaching grant funding/awards/publications of teaching physician as well as attitude towards training in teaching.

Results: Teaching physicians tried to satisfy scientific research or grant funding/awards/publications requirements and failed to apply time on teaching, thus affect the teaching quality. Teaching training can serve as an approach to ensure career growth and advancement in medical education. Teaching physicians should be equipped with teaching skills and educational administration in teaching curriculum development.

Conclusions: We recommend the outstanding teaching physician should not only be equipped with clinical skills, but also be full of teaching enthusiasm and methods as well as improved the quality of teaching through training.

Highlights

1. It is important to administrate teaching environment and policies to provide career chances for teaching physician.
2. Evaluations was made for teaching activity and quality about personal strategic planning of the manuscript- and fund-focusing on professional development.
3. Clinical training provides a foundation of the course in medical education, where teachers gather to participate in sessions and workshops.

Background

Frequently, traditional medical school put emphasize on the basic medical knowledge. Even though in recent years, PBL (Problem-Based Learning), CBL (Case-Based Learning) and simulated teaching have been carried out, most of them are still limited, which lack of actual clinical training like making diagnosis, treatment and grasping surgical skills. Moreover, the practice of medicine is a complex endeavor involving the application of a broad array of knowledge and skills, especially the medical uncertainty including biomedical ethics and gaining the doctor-patient relationship at bed-side. Thus

graduate medical education is the first step in training physicians capable of critical skills, knowledge, and independent patient care in the clinical training (1).

In China, the majority of the teaching work is conducted by the first-line clinicians in the teaching hospital, who need to undertake the task of medical, scientific research and teaching work at the same time. Because of the potentially overwhelming of clinical work, attendance at a substantial teaching remains more difficult. Even more in recent years, the scientific work occupied a certain amount of effort and proportion in daily work and career promotion evaluation, the hyper-competition for scientific publications and grant funding in affiliated hospital has become a debated discussion in China these years and has outsized negative effects on doctors to gain career promotion (2). Doctors tried to satisfy scientific research requirement and failed to apply time on teaching, thus affect the teaching quality. This situation needs to be changed, therefore building a successful professional career in the teaching physician is rewarding but challenging, especially in the dynamic and competitive environment of today's modern society.

Career opportunities including development of career plans, focusing on career goals, implementation of career steps, and evaluation of career success. Ross.E believed that one of the first issues was to resolve the need to better define the career expectations for individuals(3). With today's growing focus on the translation of basic science into clinical practice, the demand for teaching physician is likely to grow. Thus teaching physician was specially categorized in Shanghai General Hospital affiliated to Shanghai Jiao Tong University, which has led to multiple choice of career paths. Other career paths categories are clinical physician, scientific physician, and combined clinical-scientific physician, which are mainly focus on whose corresponding specialized regions. Nevertheless, no matter what type the doctor is, his main responsibility is to undertake clinical work. The hospital both provide promotion paths and require regular assessments for teaching physician. For teaching physicians, in addition to responsible for clinical medical diagnosis and treatment in daily work, at the same time they focus on teaching which required the doctors should be equipped with teaching methods. On the other hand, the participation of the clinicians in the teaching team has ensured excellent teachers with enthusiasm and improved the quality of teaching through training.

In this article, we defined teaching physician category and take the reader through a potential framework for establishing duties and professional development for career advancement in graduate medical education. The primary aim of this study was to characterize the status of career promotion of teaching physicians in China in order to equip doctors with required teaching skills. Secondary aim was to assess the aptitude from students and doctors to teaching physicians and identify performance on teaching physicians. Thus 27 interview questions were based on current situation of teaching physician and their career development model that framed key elements associated with curriculum of evaluations, recommendation, interactions, memberships in organizations, continuing medical education. We also discuss the steps involved in percentage in clinical work, scientific research, grant funding/awards/publications, and establishing methods to training in academic professional

presentations. Our hypothesis is that there is a positive correlation between effect and belief in an educational field.

Methods

Interview Administration

Our study included web-based questionnaires of the teachers and students in Shanghai General Hospital affiliated to Shanghai Jiao Tong University. Surveys were distributed from January to July of 2019. A total of 140 participation in the survey was anonymous and voluntary. Each participant completed a survey online in a single session. Responses were collected via Wen Juan Xing (<https://www.wjx.cn>), and exported as an excel file, recruitment was conducted by online analysis, respectively. Data analysis was performed only on received responses. The entire survey can be found in Table 1. A 27-item interview protocol questions were developed regarding current teaching physician in graduate medical education. Participants were asked to quantify their opinion and make choice. We asked structured questions about the doctors' attitude towards quality of teaching physician and their teaching climate. We investigated attitudes toward educational doctor career specialty and about factors that have influenced their choice. We also tracked doctors' actual state in clinical, scientific and teaching work as well as attitude to grant funding/awards/publications.

Results

Respondents' answer overview

We received 140 responses to the survey. Of all the respondents, 128 (91.43%) were from the teaching hospital, including 56 (40%) teaching physician. 88.57% of the interviewers confirmed there are teaching physicians in their hospital. A total of 100 (71.43%) interviewers felt it is necessary to set the type of teaching physician. 5.71% do not care if it is necessary to set the type of teaching physician. However, while refer to aspiration to be a teaching physician, 25.71% very much willing, 57.14% need consideration, 14.29% don't willing.

The actual situation in teaching

The majority (94.29%) of the responders thought the working time of teaching physician should be part time. 54.29% indicated that the appropriate teaching proportion of teaching physician should be 40%, 28.57% responded the proportion should be 60%, only a minority (2.86%) felt the percentage should be 80%. 51.43% of the interviewers thought no matter how busy the clinical work is, they can teach students as requested. 42.86% believed although they know the importance of teaching, since they are engaged in clinical work, how much they can teach depends on time. 5.71% indicated the clinician's responsibility is to conduct medical treatment or operation, teaching occupies much of time, they basically do not teach. Only 11.43% of the interviewers thought 80% teaching physicians reach the standard. 2.86% indicated the proportion is 100% or 60%, 11.43% reported the percentage is 80% or 40%, 71.43% regarded the

proportion is 20%. Correspondingly, 31.43% of the interviewers indicated 20-40% of the teaching physicians do not meet the requirements, their purpose of being an educational doctor is to require career promotion, while 14.29% thought the percentage is 60%, even more 17.14% regarded the proportion is up to 80%, which might be related to teaching physician paid more attention to scientific or teaching grant funding/awards/publications for their career development instead of actually engage in teaching work.

The proportion of clinical work of teaching physician

It is important to concentrate one's efforts as much as possible in her/his specialist clinical region. Good teaching was generally conducted along with experienced clinical technology, therefore feedback was as below: doctors can't teach if they are not equipped with clinical knowledge or surgical skills (85.71%), doctors should engage in teaching instead of clinical work (8.57%), how much I can teach depends on time since I am occupied with the clinical work (5.71%).

The proportion of scientific research work of teaching physician

Scientific research is an important evaluation standard of teaching physician's career promotion in our institution. 68.57% of the respondents from programs thought the appropriate science research proportion of teaching physician should be 20%, 14.29% responded the proportion should be 0% or 40%. Regarding the proper proportion of scientific research in the work of teaching physician, we collected feedback: Teaching physician should also be equipped with the scientific research ability in order to teach students (77.14%), teaching physician should engage in teaching instead of scientific research (11.43%), scientific research is efficient, whether I am a teaching physician or not, I must focus on scientific research (8.57%), although scientific research is important, the reason why I choose to be a teaching physician is to save effort on scientific research (2.86%).

Teaching grant funding/awards/publications

Teaching specialized doctor aptitude assessments also included academic advancement such as the grant funding/awards/publications or certificates of accomplishments. However, in recent years, there existed the phenomenon that doctors only apply and focus on teaching grant funding/awards/publications, but not actually do teaching work. In our questionnaire, 71.42% agreed with the statement " I am willing to teach, however time is limited, I need to gain grant funding/awards/publications for career promotion instead of daily teaching work", whereas 28.57% reported the purpose to be educational doctors is for career promotion, so grant funding/reward/publication is the most important. 25.71% responded they are happy to teach, however grant funding/reward/publication is the only evaluation for career promotion instead of daily teaching work. As to reply for the reasonable to use teaching grant funding/awards/publications as evaluation of teaching physician, 48.57% felt there is no other evaluation way, grant funding/awards/publications are fair in evaluation, 22.86% believed it is very reasonable. Other evaluations were: grant funding is reasonable (5.71%), publications are reasonable (2.86%), both grant funding/awards/publications are unreasonable (20%). The majority (80%) of respondents regarded that they should put emphasize on the

actual teaching problems rather than take the level of grant funding/awards/publications as the only evaluation. 20% thought it depends on the level of the grant funding/awards/publications, national grade is the best and is fair for score. However, 11.43% reported 60% teaching physicians only focus on grant funding/awards/publications, while do not actually engage in teaching work. 28.57% thought the percentage is 40%, another 8.57% even indicated the percentage is 80%.

Elements of teaching physician

Educational doctor should incorporate both professional and personal considerations. Regarding attitude towards integration through teaching, 34.29% greatly promoted, 57.14% have a positive effect, but need to be improved. 8.57% have general effect. Survey to the most important quality of an educational doctor were: devote to the teaching work (48.57%), good at getting along with students, benefit students from clinical knowledge (48.57%), good at writing grant funding/publications or gain awards (2.86%), while no one thought good at speeches and teaching competitions are the most important quality of an educational doctor. Respect to opinion of the effect of teaching physician in the educational team building: 40% agreed with the statement "Scientific research is more important than teaching", 34.29% believed educational physician is important to guide the educational team, while 25.71% felt limited number of teaching physician has no impact on team building. Furthermore, 74.29% indicated teaching physicians should update the teaching concept regularly to bring students new and meaningful teaching experience, 8.57% thought update the teaching concept is one thing, while actually teaching is another thing. 17.14% regarded although they know updating the teaching concept is important, they are occupied with the clinical work, when they do actually teach, they follow the old idea. No one thought there is no need to update the teaching concept.

Attitude towards training in teaching

Training education fellowships provide a foundation of the course in surgical education each year. Fellowships provide the opportunity to obtain and participate in formal training combined with research and teaching. Quality of teaching was predominantly assessed using evaluations of teaching. 57.14% considered training as well as updating the teaching concept and methods is the most important in teaching currently, 34.29% felt they can't teach if they are not equipped with clinical knowledge or surgical skills. 2.86% indicated theoretical knowledge is more important than actual clinical work in order to prepare for lecture, while another 2.86% suggested taking grant funding/awards/publications to evaluate quality of teaching. Then we conducted investigation about training in teaching, 68.57% detected that we should develop frequently training combined with new teaching concept and methods, 20% of the interviewers although know it is important to participate in the course, however they are occupied with the clinical and scientific research, they can't follow the frequency. Likewise, a small part of doctors (5.71%) considered there is no need to train, at the time they do the clinical work, they teach. Another 2.86% felt since they are occupied with clinical work, how much they participate in the course depends on time or they don't care since it doesn't matter to them. Likewise, 54.29% considered that whether they can participate in training course depends on time, since they are occupied with clinical work; 37.14% felt it is

very helpful to participate in training course; 8.57% believed whether they participate in training course or not, they only care about the certification required by career promotion; No one don't want to take part in training and regarded it a waste of time. Furthermore, the answers related to the time and frequency requirements for teaching courses were: regular frequency lectures are very important. I take it seriously to prepare clinical teaching and courses (51.43%); How much I can teach depends on my time (14.29%); Although I think it is very important, however due to the clinical and scientific research cost time, I can't ensure the quality (14.29%); Other feedback identified by interviewers on the survey included the following: Theoretical knowledge is combined with actual clinical work, for a few participants, there is no need to arrange special courses (8.57%); Although I think it is very important, however due to the clinical and scientific research cost time, I can't follow the frequency (8.57%). Although I think it doesn't matter, however, in order to meet the hospital's requirements, I will still follow the frequency, but can't ensure the quality (2.86%);

Teaching appearance

After the doctor has selected the educational field for their career, we investigated how best to provide the residents with early exposure and training opportunities, and what impact this self-knowledge might have on their career aspirations. As a sensitivity analysis, 40% observed teaching is related to the teacher's appearance, teaching state and speaking tone or speaking tone can be trained; 20% considered theoretical and clinical knowledge is more important. Then what is the difference between a teaching physician and general teacher? 74.29% felt teaching physician is both a teacher and doctor, who should be equipped with good theoretical and clinical knowledge. 17.14% indicated teaching physician is much more busier than teacher, who should ensure patients' safety during teaching. 5.71% felt teaching physician is the same as general doctor. 2.86% thought the general teacher is good than teaching physician. No one regarded teaching physician is the same as general teacher.

Discussion

Teaching is an integral part of medicine and an essential clinical doctor responsibility, teaching physicians are vital to the graduate medical education. Teaching medical students and residents are key components of a doctor's role. Obviously, it is important that there are clear metrics for teaching excellence attributable to individual academic teaching performance. However, there remained to be explored that how teachers are formally prepared for their teaching role: Who are the ideal teachers? What are the teacher's day-to-day duties? What will be the major focus?

Graduate medical education (GME) defined typical teaching physician' work including 3 main duties: delivering high quality, safe, and efficient patient care; providing comprehensive physicians-in-training education; and contributing to scholarship. Each of these duties has regulatory aspects with which the teaching physician must comply (1). Teaching physicians involves following these standards, they spend a great deal of time reviewing each patient's medical care accompanied by a resident who observes their

activities (4). The residents even achieve competence through the efforts of teaching physicians, who are mentors, advisors, role models, instructors, evaluators, and safety officers (1).

Thus, with today's focus on the translation of basic science discoveries into clinical practice, the demand for teaching physicians is growing. Teaching physicians play a central role in advancing residents initiatives and promoting a culture of education among new physicians. An educational teacher pathway is regarded as an independent area of specialization in teaching, which is an option for those who has the potential for teaching effort. In our investigation, 91.43% of the interviewers are from the teaching hospital, among them 40% are teaching physicians. 88.57% confirmed there are teaching physicians in their hospital, 71.43% felt it is necessary to set the type of teaching physician.

Frequently, as one considered to develop as medical educators, he established his priority and mission to be able to navigate his career. Especially for those who desire education as a major component of their careers should combine educational theory, operating, and simulation research. For example, we recommend the first step for any developing surgeon educator is to master one's abilities as a surgeon, followed closely or simultaneously by mastering one's abilities as a teacher. Without the former though, the latter is of no use(5). Thus, surgeon educator should encompass and excellence in clinical surgery, and well integrate the science knowledge and skill acquisition into surgical training and administration since they are not only responsible for developing clinical skills, but also required to become adept at teaching. Additionally, some teaching physicians have specific teaching responsibilities within their sub-disciplines. As to the obstetrics and gynecology department, the surgical skills requires hand to hand teach, the professional goals of teaching physicians are to advise the best clinical and operative skills to residents in graduate medical education. Therefore, educational doctor should be equipped with experiences, perspectives, and skills that make them appealing in medical education nationally. In our investigation, we assessed career development among doctors' opinion towards teaching physicians, 85.71% of the interviewers believed doctors can't teach if they are not equipped with clinical knowledge or surgical skills, thus demonstrated that good teaching was generally conducted along with experienced clinical technology.

However, the challenge all physician investigators face is the increasing burdens of clinical activities, particularly with the advent of writing medical records (3). Thus it is recommended to reduce the clinical workload of teaching physicians. Yet, teaching physician even face a number of unique challenges to juggle the demands of clinical care with the time required to perform scientific research or teaching grant funding/awards/publications for their career development. Only 11.43% of the interviewers thought 80% teaching physician reach the standard, while 71.43% indicated the percentage is 20%; Another 31.43% believed 20–40% of the teaching physicians do not meet the requirements, their purpose of being an educational doctor is to require career promotion, even more 17.14% regarded the proportion was up to 80%.

Ultimately, an appointments, promotion system is not responsive to the needs of faculty working across clinical care and research, particularly when it comes to evaluating team may have trouble being

promoted (3). The teaching physician is a part-time faculty member, they would even competition for funding from full-time PhD investigators (3). When investigators split their time between clinical activities and research, they are not likely to fully meet the target metrics of either full-time researchers or full-time clinicians. We analyzed interviewers' responses to these questions, even 68.57% of the respondents from programs thought the appropriate science research proportion of teaching physician should be 20%, which is corresponded with the evaluation for teaching physician's promotion in our hospital. 77.14% regarded the teaching physician should also be equipped with the scientific research ability in order to teach students. While another 2.86% reported although scientific research is important, the reason why they choose to be a teaching physician is to save effort on scientific research.

On the other hand, the hospital also recommended teaching grant funding/awards/publications as the specific promotion requirements for teaching physician. Since it seems the recipients of grant funding were more successful in career promoting than those individuals without grant funding on most career achievement measures, in recent years, there existed the phenomenon that doctors only focus on teaching grant funding/awards/publications, but don't actually do teaching work. As more awards are made, the teaching physician faculty candidates increase career promotion and gain training, observation, or education in order to be fully successful. Most of us regarded the use of grants as promotion criteria is cruelly unfair, although 80% of respondents regarded that they should put emphasize on the actual teaching problems rather than take the level of grant funding/awards/publications as the only evaluation, 8.57% indicated 80% teaching physicians only focus on grant funding/awards/publications, while do not actually engage in teaching work. Thus 28.57% agreed the purpose to be educational doctor is for career promotion, so they regarded grant funding/reward/publication is the most important. The reason might be that 71.42% indicated they are happy to teach, however time is limited, they need to gain grant funding/awards/publications for career promotion instead of daily teaching work. 48.57% reported there is no other evaluation way, grant funding/awards/publications are fair in evaluation, only 22.86% believed it is very reasonable.

These above severe situation need to be changed, Mark Hayter believed that only focusing on publishing an internationally excellent paper or winning a large competitive research grant or even successfully supervise PhD students, ignore actual teaching, might be a dark art worthy of inclusion in education curriculum (6). In theory, it would be ideal for all surgical residency applicants to have high technical aptitude—among other nontechnical skills essential for the professional development of an effective surgeon (7). Development of skills to become a successful medical professional, including professional behavior, goal setting, establishing and maintaining self-esteem, time management and teamwork (8). We referenced that perceived professional competence among clinical research coordinators recommended three career constructs including career engagement (CE), career planning (CP), and career satisfaction (CS) were selected to represent career orientation (9). Career engagement (CE) represented the degree of proactively exhibiting different career behaviors to enhance career development, is of theoretical, organizational, and personal importance(10). Career planning (CP) represents a facet of career self-management that includes setting clear career-related goals and developing specific strategies needed to achieve those goals(11). Career satisfaction (CS) refers to an internally defined indicator of

career outcomes. Thus career goals would be relatively accepted within the current institutional culture on the medical curriculum committee if professional development opportunity was offered to teaching physicians. The distant goals focus on technology, educational theory, curriculum development, accreditation, assessment, feedback, quality improvement. Strategic career planning has recently entered the academic curriculum as part of faculty development educational programs.

Efforts to promote career satisfaction, reduce burnout, and facilitate retention need to be expanded beyond early career interventions and may need to be tailored by career stage. Previous literature has shown that dissatisfied physicians are also at higher risk for professional burnout, which is a potential barrier to successful health care reform(12). Therefore, we should also provide a way for teaching physicians to report their satisfaction when educating. Compared with those who chose other specialties, the largest influences on those who chose teaching physician were enthusiasm or commitment: what I really want to do, fits my domestic circumstances, wanting a career with working conditions. The most recent cohorts have become much more definite about their choice of educational doctor as a career than older cohorts. In our introduction, we showed 25.71% very much willing to work in as teaching physician.

Actually, teaching physicians require regular clinical generation, supervision and evaluation of training. Frequently, there are many different pathways in medical education. Surgeons assume that training translates them into being an excellent educator, for example, surgical Education Leadership lesion is intended to serve as preparation for a career in surgical education. More local opportunities like personal and professional progress can be made in various aspects of educational development. Substantially committee participation and on-line options for specializations could also be important avenues of medical professions education. Teacher faulty can participate in the network, resources, and conferences through educational development opportunities such as lectures, seminars, workshops, communities and organizations. A workshop should be conducted for educators which had two objectives: (1) demonstrating educational methods that have been successfully used for teaching in the arena of career development and practice management and (2) developing a professional network to facilitate communication and collaboration toward effective teaching and learning.

Fellowships provide the opportunity to obtain and participate in formal training combined with research and teaching. We assessed quality of teaching predominantly using evaluations, 57.14% recommended training as well as updating the teaching concept and methods. Next we conducted investigation about training in teaching, 68.57% detected that we should develop frequently training combined with new teaching concept and methods. 51.43% believed regular frequency lectures are very important, they take seriously to prepare clinical teaching and courses. Yet, current challenges in surgical education include limitations on time for training due to work-hour overload and scientific demands, as well as the increasing diversity and complexity of surgical procedures (13). Likewise, 54.29% considered that whether they can participate in training course depends on time, since they are occupied with clinical work. Another part of interviewers recommended although they think it is very important, however due to the clinical and scientific research cost time, they can't ensure the quality (14.29%) or follow the frequency (8.57%);

It is through the development of clear, objectively measurable teaching related outputs and quality evidence that we can be unequivocal when we answer the question; 'who is the best teacher in your school'. Students' feedback and qualitative evaluations of their tutorial should also be available to judge teaching effectiveness and quality in individual promotion and career progression cases(6). In our investigation, regarding attitude towards integration through teaching, 34.29% greatly promoted, 57.14% have a positive effect. 48.57% believed the most important quality of an educational doctor were: devote to the teaching work, good at getting along with students, benefit students from clinical knowledge, while no one thought good at speeches and teaching competitions are the most important quality of an educational doctor. 34.29% agreed with the statement "Educational physician is important to guide the educational team". Furthermore, 74.29% indicated teaching physicians should update the teaching concept regularly to bring students new and meaningful teaching experience. As a sensitivity analysis, 40% observed teaching is related to the teacher's appearance, teaching state and speaking tone can be trained; 20% considered theoretical and clinical knowledge is more important. Then what is the difference between a teaching physician and general teacher? 74.29% felt teaching physician is both a teacher and doctor, who should be equipped with good theoretical and clinical knowledge. 17.14% indicated teaching physician is much more busier than no-medical teacher, who should ensure patients' safety during teaching.

Conclusion

Our study illustrates unique challenges for career teaching physicians. As more and more career opportunities and challenges arise during the next 10 years, teaching physicians will be better prepared by knowing the basic tenets of strategic career planning. This study has a number of limitations. There are areas for further research which are beyond the scope of this study. These could include consideration of differences between graduates of different type of doctors. Additionally, certifications, continuing medical education, course evaluations, awards, and other potentially relevant information could be received later.

Abbreviations

PBL: Problem-Based Learning, CBL: Case-Based Learning, GME: Graduate medical education, CE: career engagement, CP: career planning, CS: career satisfaction

Declarations

Ethics approval and consent to participate

This study was conducted according to the Declaration of Helsinki, and ethical approval to conduct the study was obtained from the Ethical Committee on Human Research of Shanghai General Hospital affiliated to Shanghai Jiao Tong University, China, reference number: 2020SQ078. All participants gave written, informed consent to participate and for their identified data to be used in publication.

Consent for publication

Our work has not been published elsewhere in any other language previously, it is not under consideration for publication elsewhere. The publication of our work is approved by all authors and tacitly or explicitly by the responsible authorities. YY has made a significant contribution to the conception, design, execution, or interpretation of the reported study. All the authors ensured that we have written entirely original works.

Availability of data and materials

The datasets used during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declared that they have no competing interests.

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Author's contributions:

YY analyzed and interpreted the patient data. LWS, YJX, WB, BYY and JSX collected information and participate in teaching. YY, FSW, WL and LYL worked equally as major contributor in writing the manuscript. All authors read and approved the final manuscript.

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Tables

Due to technical limitations, Table 1 is only available as a download in the supplemental files section

Supplementary Files

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