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Article

Study on the impact of the DRG model on human resource allocation at public hospitals

Jianhua Cheng*, Ye Zhao

International College, Krirk University, Bangkok 10220, Thailand
*** Corresponding author:** Jianhua Cheng, cjh50995283@gmail.com

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Abstract: Diagnosis-related groups (DRGs) are gaining prominence in healthcare systems worldwide to standardize potential payments to hospitals. This study, conducted across public hospitals, investigates the impact of DRG implementation on human resource allocation and management practices. The research findings reveal significant changes in job roles and skill requirements based on a mixed-methods approach involving 70 healthcare professionals across various roles. 50% of respondents reported changes in daily responsibilities, and 42% noted the creation of new roles in their organizations. Significant challenges include inadequate training (46%), and coding complexity (38%). Factor analysis revealed a complex relationship between DRG familiarity, job satisfaction, and staff morale. The study also found a moderate negative correlation between the impact on morale and years of service in the current hospital, suggesting that longer-tenured staff may require additional support in adapting to DRG systems. This study addresses a knowledge gap in the human resource aspects of DRG implementation. It provides healthcare administrators and policymakers with evidence to inform strategies for effective DRG adoption and workforce management in public hospitals.

Keywords: diagnosis-related groups (DRGs); human resource management; skill requirements; job roles; training; job satisfaction; workforce planning; healthcare administration

1. Introduction

1.1. Background on diagnosis-related groups (DRGs)

Diagnosis-Related Groups (DRGs) are classification methods for standardizing potential payments to hospitals. Their implementation originated in the United States during the 1980s. Many healthcare systems worldwide apply it to enhance efficiency and transparency while improving cost control in hospital reimbursement (Bredenkamp et al., 2019). The DRG system groups many cases treated in hospitals into classes that demonstrate similar clinical patterns associated with identical resource uses. The DRGs found their basis in awarding a fixed payment for every group, not the costs incurred during the treatment of each case (Olsen, 2017). It shifts the financial risk from payers to providers, incentivizing hospitals to optimize resource use for better operational efficiency (Jiang and Peng, 2019). The DRGs have emerged as the solution for healthcare reforms geared toward containing costs and seeking sustainable financing models across healthcare systems worldwide. Various countries, including China, Germany, and the United Kingdom, have adapted DRG systems to local contexts, developing tailored versions to enhance efficiency in healthcare delivery.

1.2. Impact of DRGs on healthcare management

DRGs' implementation-initiated changes in healthcare management practices. This motivated greater emphasis on clinical coding and documentation accuracy. First, since the assigned DRG directly embraced reimbursement, hospitals have made massive investments in improving their coding process to ensure appropriate compensation for the services rendered. The focus on accurate coding has further reinforced the development of health information systems and the deepening of data analytics capabilities in health organizations. Second, DRGs encouraged many hospitals to reassess resource allocation. Because there is a fixed payment for every DRG, healthcare managers are incentivized to have each service utilize length-of-stay efficiency, avoid unnecessary procedures, and make care pathways more efficient. As a result, clinical pathways and standardized treatment protocols have been developed to balance cost-effectiveness with quality of care (Feng et al., 2020).

Thirdly, it impacts the strategic decisions at the hospital level. This could result in institutions modifying their services according to the profitability of their chosen DRGs. It may result in specialization or withdrawal of less profitable services. Such strategic reorientation may impact access to health care and medical specialty distribution across locales (Gluckman et al., 2020). Lastly, DRGs have fostered a trend toward value-based health care. Because the system is based on diagnoses rather than individual services, it encourages holistic treatment methods. This value-based care principle has further aligned healthcare organizations towards a focus on outcomes and quality metrics, which will foster innovation in care delivery models (Ma and Wang, 2021).

1.3. Importance of human resources in DRG implementation

Successful execution and operation of a DRG-based payment system depend on healthcare organizations' human resources. The transition to DRGs entails major workflow reforms, new skills acquisition, and organizational culture changes. Human resource management will move to the frontlines of transformation. First, the correct assignment of DRGs depends on the skillfulness of clinical coders and documentation specialists. Such professionals must deeply understand the terminologies, coding guidelines, and intricacies of the DRG system. Health organizations must enhance workforce training and education to get around all that is complicated with DRG-based coding (Dong, 2020).

The second factor impacting a DRG system's success is the clinicians themselves. Physicians and nurses must change documentation habits and provide all relevant clinical data for DRG assignments. This often requires a cultural shift from narrative to structured documentation, necessitating implementing change management strategies and targeted training initiatives (Annear et al., 2018). Thirdly, DRGs open up numerous roles and responsibilities within the institution; case managers, clinical documentation improvement specialists, and DRG analysts play a crucial role in the revenue cycle. Consequently, healthcare HR must develop new job descriptions, recruitment strategies, and career pathways to align with these roles (Wager et al., 2021).

Fourth, pressure to optimize resource use in DRG-based payment systems may

impact workforce planning and management. According to Graban (2018), Healthcare managers must balance efficiency needs without adversely affecting the quality of care or staff satisfaction. This could require workflow redesigns, flexible staffing models, and the development of performance metrics focused on DRG-based incentives. Lastly, successfully adopting DRGs requires a cultural change within healthcare organizations. Human resource departments' role in promoting a culture that supports data-driven decision-making, continuous improvement, and cross-functional collaboration cannot be repeated enough to drive change. A cultural transformation of this kind is necessary to fully realize the potential of a DRG-based system for improved efficiency and care quality.

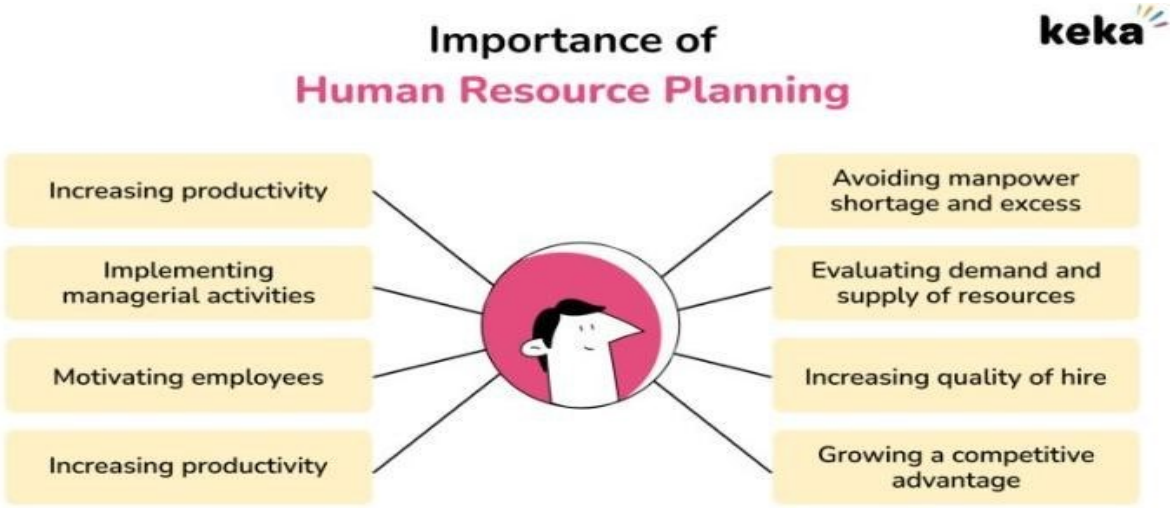

Figure 1. Human resources' importance in DRG implementation.

As illustrated in **Figure 1**, Human Resource Planning (HRP) is essential for organizational success, as attested by a 2001 study by Ogunrinde, which proved that organizations actively involved in HRP performed better than those not involved. It is the foundation of various HR functions, such as recruitment, onboarding, performance appraisal, and so on (Trost, 2020). HRP helps organizations meet their staffing needs by adjusting human resource strategies in the best interest of organizational goals. It identifies skill gaps, forecasts future talent requirements, and designs strategies for attracting, retaining, and developing employees. It improves resource allocation, team member engagement, and adaptability to the changing conditions in the market (Singh et al., 2021). Effective human resource planning becomes instrumental in ensuring that each organization, at any point in time, possesses the right people with the right abilities who hold the correct positions, which is crucial to attaining its set strategic objectives and overall performance.

1.4. Conceptual framework

The conceptual framework that underpins this study explores how healthcare management practices and human resource strategies intersect with DRG (diagnosis-related groups) implementation. Throughout this study, the conceptual framework guided the analysis, demonstrating how technical proficiency, organizational culture, workforce adaptability, and strategic human resource management influence DRG

adoption and its impact on job roles and satisfaction. These factors shape how healthcare organizations implement and manage DRG systems, ultimately affecting job roles, skill requirements, and employee satisfaction.

The conceptual framework combines ideas from human resource management and healthcare management. It stresses the importance of structured documentation, making decisions based on data, and ongoing professional development to make DRG implementation easier. This framework guides the study's research questions, informing the design and analysis to ensure the investigation addresses the key elements necessary for successful DRG adoption in public hospitals.

1.5. Research objectives and questions

This study designed its research objectives to explore the intersection of DRG implementation and human resource management in healthcare organizations. These objectives guided the formulation of the research questions, ensuring that each question directly addresses a vital aspect of the study. These objectives align with the findings, which offer comprehensive answers to the research questions and provide valuable insights into the challenges and strategies associated with DRG implementation. The primary objectives of this study are:

1) To analyze the effects of DRG implementation on human resource management practices in healthcare organizations.
2) To identify the key challenges healthcare staff face in adapting to DRG-based systems.
3) To evaluate the role of human resource strategies in facilitating successful DRG adoption.
4) To assess the impact of DRG-driven changes on workforce satisfaction and performance.

To address these objectives, the following research questions will guide this study:

1) How has implementing DRGs altered healthcare organization's job roles and skill requirements?
2) What are the primary human resource challenges encountered during the transition to DRG-based payment systems?
3) Which human resource strategies have proven most effective in supporting successful DRG implementation?
4) How do DRG-driven changes in healthcare management affect employee satisfaction and retention?
5) What is the relationship between human resource practices and the accuracy of DRG coding and documentation?

2. Materials and methods

2.1. Research design

This mixed-method study combined quantitative and qualitative research techniques to investigate how the intersection of DRGs and human resource management in healthcare organizations comes about. This mixed-methods design

explores broad trends and the contextual factors that influence the DRG implementation in human resources. The quantitative section involved online questionnaires that were used to collect structured data on the impact of DRGs on job roles, skill requirements, and workforce satisfaction. It was possible to outline trends and correlations in a larger sample of healthcare professionals (Wang and Hajli, 2017). The qualitative part, which involved case studies of various health institutions, addressed this issue by providing insights into the challenges and strategies involved in implementing the DRG system.

The combination of methods allows triangulation and increases the validity and reliability of findings. A sequential mixed-method design makes sense because the research goals cover many different areas. This type of design allows for a deep look at both the measurable effects and the complex human experiences linked to using DRGs in health settings (Partridge, 2018).

2.2. Data collection methods

The online survey served as the core data collection method for the study because it sought to understand various insights from health professionals involved in implementing and managing DRGs. The survey instrument has been designed based on a critical review of existing literature and further refinement through pilot testing with a small group of healthcare managers. It had both closed-ended Likert scales and open-ended questions requiring more elaborate responses. Guided by the literature, it covered the main areas of changes in job roles, skill requirements, workforce challenges, and perceived impact on job satisfaction and performance. This study, 70 respondents were recruited through purposive sampling to ensure representation from different healthcare roles, including clinical coders, physicians, nurses, hospital administrators, and human resource managers.

Case studies of carefully chosen healthcare institutions complemented these. The case studies included document analysis of hospital policies, DRG implementation reports, and human resource strategies. The online survey enabled a broader geographic reach and boosted potential response rates due to the respondents' convenience. This multi-dimensional approach to data collection allowed for an overall view of the complex interplay between DRGs and healthcare facilities' human resource management systems (Persson et al., 2021). The combined dataset of quantitative data from the survey and qualitative insights from the case studies was rich and could answer research questions from different angles. Both broad trends and context-specific factors that drive DRG implementation processes and their implications for human resources could be recognized.

2.3. Population and sampling

The inclusion criteria for the study participants were: healthcare professionals in public hospitals were directly involved in implementing DRG systems, including roles such as clinical coders, physicians, nurses, hospital administrators, and HR managers. Participants were required to have a minimum of one year of experience in their current role. The exclusion criteria included healthcare professionals not involved in DRG-related tasks or those working in private healthcare settings, as their experiences

may differ significantly from those in public hospitals. Recruited participants through purposive sampling ensure representation from key healthcare roles crucial to DRG implementation. Recruitment was conducted through email invitations to healthcare professionals identified through professional networks and partnerships with public hospitals. Participation in the study was voluntary, and informed consent was obtained from all participants prior to data collection.

Purposive sampling was employed to select healthcare professionals with direct experience in DRG implementation, ensuring relevant insights aligned with the study's objectives. The diverse representation of roles within the sample was critical to capturing a comprehensive view of the impact of DRG systems on human resource management in public hospitals.

2.4. Data analysis techniques

The collected data were then analyzed using quantitative and qualitative methods, with The Statistical Package for the Social Sciences (SPSS) is the foundation for statistical analysis.

Quantitative survey data used descriptive statistics to summarize and present general trends in the response points. These involved central tendency measures, such as mean, median, mode, standard deviation, and range dispersion measures for Likert-scale items, and frequency distributions for categorical variables. The study applied inferential statistics and used correlation analyses to test relationships between variables and hypotheses, examining the relationship between DRG implementation factors and human resource outcome variables.

The qualitative survey and case study responses were analyzed for content data. The reactions were coded and categorized to establish recurrent themes and patterns in the data. Iterative processes in qualitative analysis refine and consolidate initial codes, subsequently analyzing more data. The coded qualitative data was also managed and analyzed in SPSS, providing an avenue for quantifying emerging themes and integrating them with quantitative findings. A factor analysis was conducted to identify latent constructs related to challenges in DRG implementation or effective human resource strategies. This mixed analytical approach enables full exploration of the research questions. It offers statistical consistency and rich contextual insight into the human resource implications of DRG implementation in healthcare settings.

2.5. Ethical considerations

Ethical considerations were crucial in this study, any leakage of sensitive healthcare data and personal health information might prove detrimental to the interests of healthcare professionals and organizations. Before implementing the research, ethical approval was obtained from the appropriate institutional review board based on compliance with institutional guidelines on human subject research. The study required informed consent, ensuring full disclosure of the research objectives, methods, potential risks, and expected benefits. The study would allow participants to withdraw without facing any consequences. Data collection and analysis at no point would compromise confidentiality or anonymity. Survey responses were anonymized, and any identifying information was removed from the case study data.

Participation was made clear voluntarily, without coercion or undue influence from immediate supervisors or administrators. Another consideration in the study's design was to avoid any potential impact on participants' time and workload. One of the reasons for deploying the online survey format for this study was to reduce interference with the busy schedules of healthcare professionals because face-to-face information gathering also takes an extended time. The study ensured the confidentiality of data for both participating individuals and organizations. To avoid identifying any single institution or individual, they reported the results in an aggregate form. The design and implementation of this research included ethical considerations to ensure unwavering respect for the rights and welfare of participants.

3. Analysis and findings

3.1. Introduction

This chapter presents a detailed data analysis using our quantitative survey and qualitative case study insights from the mixed-methods approach. Descriptive statistics compiled in a structured methodology provided the initiation of the analysis process so that an overview of the sample demographics and general trends could be had. Frequency analyses were conducted to determine how the responses were distributed for some key variables about the implementation of DRG and its effect on human resources. Correlation studies identified the relationships between variables, and factor analysis was used to identify fundamental constructs. Comparative analyses determined the differences between the professional role and experience level. This multifaceted approach explored the complex relationship between DRG implementation and human resource management in healthcare settings.

The key objectives of this study were to determine the overall impact of the DRG implementation on job roles and the skill requirements of staff in healthcare organizations, to identify and estimate the principal human resource issues in the adoption of DRGs, and to assess the effectiveness of different human resource strategies in facilitating the implementation of DRGs. The study also examined team member satisfaction and performance changes due to DRG-driven activities. Furthermore, we scrutinized human resource practices regarding DRG coding or documentation precision. With these objectives guiding analytical instances, it was possible to answer the critical research questions and get valuable insights into the human resource implications of implementing DRGs in public hospitals.

3.2. Descriptive statistics

3.2.1. Demographic characteristics

Gender distribution

As shown in the **Table 1**, the gender distribution for this questionnaire survey had a slight majority of females. Female participants amounted to 27, accounting for 54%, while 23 were male, accounting for 46%. This relatively balanced gender distribution shows a roughly equal representation of both genders within the study sample. A slight female majority repeats general trends in healthcare workforce demographics, mainly where women comprise a more significant proportion of health

professionals. This good gender balance provides a solid foundation for analyzing perspectives across genders regarding DRG implementation and its impact on human resources in healthcare settings.

Table 1. Gender distribution.

Gender					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Female	27	54	54.0	54.0
	Male	23	46	46.0	100.0
	Total	50	100.0	100.0	

Professional role distribution

Table 2. Professional role distribution.

Professional Role					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Clinical Coder	8	16.0	16.0	16.0
	HospitalAdministrator	13	26.0	26.0	42.0
	HR Manager	11	22.0	22.0	64.0
	Nurse	11	22.0	22.0	86.0
	Physician	7	14.0	14.0	100.0
	Total	50	100.0	100.0	

As illustrated in **Table 2**, The distribution of the 70 responses across the professional roles reveals a varied representation of the health profession. This places the hospital administrators first with 13 participants, equivalent to 26%, followed by HR managers and nurses, each having 11 participants, which is 22%. The clinical coders come in with an 8-participant representation, equivalent to 16%, while physicians form the smallest group with 7 participants, accounting for 14%. It would be desirable to have a distribution representing the views of various principal stakeholders in implementing DRGs. This is particularly relevant in light of the higher representation of hospital administrators, HR managers, and nurses, considering their central roles in implementing and managing DRG systems.

3.2.2. Work experience

Table 3 suggests high variability among the respondents in almost all parameters of their healthcare careers. For example, the average number of years participants spent in the healthcare sector is 20.24 years, with a standard deviation of 13.008, suggesting a heterogeneous mix of veteran professionals among those relatively more inexperienced. The minimum of 1 year and the maximum of 39 years in healthcare underscore this broad spectrum of experience. The average general hospital tenure was 15 years, with a standard deviation 9.250. This would indicate that at the current organizational level, many participants have long years of experience, which is essential in understanding the long-term impact of the DRG implementation. Also, the span from 1 to 29 years in the current hospital suggests a mix of newer and long-term

employees who can provide a balanced view based on experience with organizational changes.

The respondents' age distribution had a mean of 44 years and a standard deviation of 11.348 years, indicating workforce maturity. The youngest was 26 years old, while the oldest was 64, representing an extensive age range within which there were people just commencing their work life and others approaching retirement age. The broad age and experience profile would capture insights from different career stages and generate generational perspectives regarding the impact of DRGs on human resource management in healthcare settings.

Table 3. Work experience distribution.

Descriptive Statistics								
	N	**Minimum**	**Maximum**	**Mean**	**Std.Deviation**	**Vaniance**	**Kurtosis**	
	Statistic	**Statistic**	**Statistic**	**Statistic**	**Statistic**	**Statistic**	**Statistic**	**Std .Error**
Years in Healthcare	50	1	39	20.24	13.008	169.207	−1.473	0.662
Age	50	26	64	44.04	11.348	128.774	−0.953	0.662
Years in Current Hospital	50		29	15.16	9.250	85.566	−1.345	0.662
Valid N(listwise)	50							

3.3. Frequency table

3.3.1. Impact of DRGs on job roles

Table 4 is the data about job roles reflects the impact of DRG implementation on healthcare organizations. The respondents evenly split on day-to-day responsibilities; 50% reported that the implementation of DRGs had changed their daily responsibilities, while the remaining 50% did not. This split demonstrates that while DRGs have influenced many roles, their impact is not uniform across all positions in any healthcare institution.

Another crucial factor to consider is the creation of new roles in response to the DRG implementation. The data indicate that 42% of the respondents reported the creation of new roles in their organizations, while 58% did not see this change. This means almost half of the health institutions found it necessary and feasible to create new positions to manage the intricacies and requirements of the DRG system. These new roles encompass the DRG coordinator, clinical documentation specialist, or data analyst focusing on DRG-related activities.

Regarding developing new skills, 46% responded that they needed to develop new skills in implementing the DRG system, whereas 54% indicated no such need. This nearly even split shows that adjustment to DRG systems required developing new abilities for many healthcare professionals. This group possesses advanced coding practices, data analysis, financial management related to DRGs, and enhanced clinical documentation techniques. One inference that can be made is that more than half of

the respondents did not need to acquire new skills, either because some jobs were already well aligned to DRG requirements or due to the effect of DRGs differing with specific job functions and organizational strategies.

Table 4. Impact of DRGs on job roles.

Affected Daily Responsibilities					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	No	25	50	50	50
	Yes	25	50	50	100
	Total	50	100	100	
New Roles Created					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	No	29	50	58	58
	Yes	21	50	42	100
	Total	50	100	100	
New Skills Acquired					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	No	27	54	54	54
	Yes	23	46	46	100
	Total	50	100	100	

3.3.2. Human resource challenges

Table 5. Human resource challenges.

Primary Challenges					
		Frequency	**Percent**	**Valid Percent**	**Cumulative Percent**
Valid	Complexity of coding	19	38	38	38
	Inadequate training	23	46	46	84
	Increased workload	8	16	16	100
	Total	50	100	100	

Table 5 indicates significant human resource-related challenges with DRG implementation. 46% of respondents rank insufficient training first, highlighting the critical deficit in staff preparedness for DRG-related tasks. Second is coding complexity (stated by 38%), emphasizing the technical problems related to correctly assigning DRGs. An increased workload of 16% represents a noteworthy concern. These findings suggest that healthcare organizations struggle with their staff's day-to-day competencies and the intricacies of managing a DRG system. The results strongly argue for a more comprehensive training program and simplifying coding processes to handle these challenges properly.

3.4. Correlation analysis

Table 6. Correlation analysis.

Correlations						
		Impact on Morale	**Years in Healthcare**	**Impacton Performance**	**Years in Curent Hospital**	**Age**
Impact on Morale	Pearson Correlation	1	−0.111	177	−0.411	0.018
	Sig. (2-tailed)	445	220	003	902	
	Sum of Squares and Cross-products	102.020	−101.680	16.720	269.120	−14.280
	Covariance	2.082	−2.075	341	−5.492	−0.291
	N	50	50	50	50	50
Years in Healthcare	PearsonCorrelation	0.111	1	−0.119	203	0.158
	Sig. (2-tailed)	445		411	157	273
	Sum of Squares and Cross-products	−101.680	8291.120	−101.480	1199.080	1143.480
	Covariance	−2.075	169.207	−2.071	24.471	23.336
	N	50	50	50	50	50
Impact on Perdommance	Pearson Correlation	177	−0.119	1	0.038	033
	Sig. (2-tailed	220	411		791	818
	Sumof Squares and Cross-products	16.720	−101.480	87.920	−23.320	24.920
	Covariance	341	−2.071	1.794	−0.476	509
	N	50	50	50	50	50
Years in Current Hospita	PearsonCorrelation	−0.411	203	0.038	1	079
	Sig. (2-tailed)	003	157	791		586
	Sum of Squares and Cross-products	−269.120	1199.080	−23.320	4192.720	405.680
	Covariance	−5.492	24.471	0.476	85.566	8.279
	N	50	50	50	50	50
Age	Pearson Correlation	−0.018	−0.158	033	079	1
	Sig. (2-tailed)	902	273	818	586	
	Sumof Squares and Cross-products	−14.280	−1143.480	24.920	405.680	6309.920
	Covariance	−0.291	−23.336	509	8.279	128.774
	N	50	50	50	50	50

**.Correlation is significant at the 0.01 level (2-tailed)

The correlation (**Table 6**) analysis reveals several exciting relationships between independent variables related to DRG implementation and its impact on healthcare professionals. The effect on morale strongly correlates with years in the current hospital ($r = -0.411$, $p < 0.01$). This could suggest that the length of tenure at the current hospital could negatively impact morale as more DRGs are added. More tenured employees may find adapting to new systems and processes more challenging.

In healthcare, no significant correlations existed between age or years and morale or performance impact. This suggests that the impact of overall career length or age

on staff morale and performance from the DRG implementation has little effect. While not statistically significant, the weak positive correlation ($r = 0.177$, $p > 0.05$) between the impact on morale and performance suggests a potential relationship between improved morale and performance under the DRG system. However, the generally low correlation level suggests a complex impact of a DRG implementation on health professionals, likely due to factors beyond the scope of the study.

3.5. Factor analysis

As shown in **Tables 7** and **8**, factor analysis provides critical insights into the basic structure of variables related to DRG implementation in healthcare settings. The study has extracted two principal components, explaining 56.568% of the total variance. This reflects a moderate level of data reduction, as it retains more than half of the information from the original data set. The first component accounts for 30.043% of the variation and indicates a strongly favorable loading for the variables Job Satisfaction Change (0.769) and Confidence in Coding Accuracy (0.614). This appears to reflect a factor called "positive adaptation to DRGs." That is, increased job satisfaction and enhanced confidence in coding accuracy are closely matched outcomes of successful implementation of DRGs.

This is shown in the **Table 9**, High positive loadings for the items Impact on Morale (.746) and Familiarity with DRGs (0.559) set apart the second component, which accounts for 26.525% of the variance. This component could be interpreted as an "engagement with the DRG system" factor, indicating that the better-known DRGs positively impact staff morale. The second component has a negative loading for Confidence in Coding Accuracy (−0.438), which may indicate some trade-off between system engagement and perceived coding accuracy.

These findings highlight how technical proficiency (coding accuracy) interacts complexly with job satisfaction and morale in DRG implementation. They suggest that strategies to improve DRG outcomes should focus on enhancing technical skills and fostering positive engagement with the system. These results also strongly support looking at these factors holistically, in those improvements in one area (e.g., familiarity with DRGs) may have varying impacts on other aspects of staff experience and performance.

Table 7. Factor analysis 1

Communalities		
	Initial	**Fxdraction**
Familianity with DRGs	1.000	545
Job Satisfaction Change	1.000	591
Impact on Morale	1.000	557
Confidence in Coding Accuracy	1.000	570
Extraction Method:Principal Component Analysis		

Table 8. Factor analysis 2

Total Variance Explained						
Component	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**		
	Total	**%of Variance**	**Cumulative %**	**Total**	**%of Vaniance**	**Cumulative %**
1	1.202	30.043	30.043	1.202	30.043	30.043
2	1.061	26.525	56.568	1.061	26.525	56.568
3	933	23.323	79.891			
4	804	20.109	100.000			
Extraction Method: Principal Component Analysis						

Table 9. Factor analysis 3.

Component Matrix		
	Component	
	1	**2**
Familiarity with DRGs	0.483	0.559
Job Satisfaction Change	0.769	0.023
Impact on Morale	−0.024	0.746
Confidence in Coding Accuracy	614	−0.438
Extraction Method:Principal Component Analysis		
a.2 components extracted		

4. Discussion

4.1. Interpretation of key findings

The demographic profile of the respondents depicts a heterogeneous sample of health professionals, with a relatively well-balanced gender distribution and a favorable representation of critical roles. The primary roles represented were hospital administrators, HR managers, nurses, clinical coders, and physicians. A diverse sample enhances this study's potential to capture a holistic view of DRG implementation impacts across multiple healthcare functions. The results indicate a mix of knowledge about DRGs and their influence on implementation in this health institution. According to the factor analysis results, greater familiarity with DRGs had a more significant impact on staff morale, and educational and training strategies played a critical role in successful DRG implementation.

Changes in the job role and skill requirements were dramatic, as 50% of the respondents indicated that the implementation affected their day-to-day responsibilities. Furthermore, 42% reported the creation of new roles within the organizations, suggesting a significant organizational restructuring to integrate DRG systems. 46% of the respondents experienced the new skills requirements due to the DRG implementation, acquiring new competencies. These findings address the research question of how DRG implementation has changed the job roles and skill requirements of personnel working in healthcare organizations. The most common challenges related to human resources are inadequate training (46%), followed by coding complexity (38%). The findings highlight areas that call for the immediate

attention of any healthcare manager and give insight into our research question about the primary human resource challenges encountered during the transition to DRG-based payment systems.

Correlation and factor analyses provided insight into the impact of implemented HR strategies despite their lack of explicit measurement in quantitative data. The moderate negative correlation between years in the current hospital and the impact on morale suggests that longer-tenured staff may need more support adjusting to DRG systems. A study of workforce satisfaction and performance found a factor related to job satisfaction change and confidence in coding accuracy. This suggests that technical factors affect overall job satisfaction in a DRG workplace. This depends on the weak correlation between the impact on morale and performance.

The accuracy of the DRG coding and documentation was a significant concern, as indicated by the high percentage of respondents who reported the coding complexity as one of the significant challenges. This aids in addressing the research question about the correlation between HR practices and DRG coding accuracy, highlighting the need for increased focus on training and support systems to enhance coding precision. This also emphasizes a holistic approach to the DRG implementation process, considering the technical and human resource aspects, as it is the interaction of the factors that emerged from the factor analysis: coding accuracy, job satisfaction, and morale.

4.2. Impact of HR strategies on DRG implementation

The results of this study emphasize the critical role of targeted human resource strategies in successfully implementing DRG systems. For example, targeted training programs significantly impacted job satisfaction and morale among clinical coders and documentation specialists. These programs should address the specific challenges of DRG coding and documentation, ensuring that healthcare professionals have the necessary skills to navigate the system's complexities. Moreover, adapting to the demands of DRG systems necessitates strategic workforce planning, which includes creating new roles and developing flexible staffing models. By aligning human resource strategies with the technical requirements of DRG implementation, healthcare organizations can achieve greater efficiency and improve overall workforce satisfaction.

4.3. Comparison with existing literature

These findings support past research on the considerable organizational changes required for DRG implementation. Fahlevi et al. (2022) report the creation of new roles and the need for skill acquisition, suggesting a potential shift in management accounting as hospitals implement DRG systems. Identifying deficient training as a significant challenge agrees with Dong's (2020) assessment of the insufficiency of comprehensive training programs for DRG implementation. However, our study further offers some new insights into the areas that need the most attention for training in complex coding.

The findings on the effect of DRGs on job satisfaction and morale bring new aspects to the field. Previous literature, like Ma and Wang (2021), concentrated on

hospital performance metrics associated with DRG implementation. However, this research unveils an additional dimension of human resource-related aspects that the literature overlooked. This significant interaction refines previous research on the positive impact of familiarity with DRGs on morale. It would be more of a question of knowledge diffusion to explain staff adaptation to the DRG system. It contributes to a more global understanding of factors influencing successful DRG implementation, extending its boundaries beyond financial or operational considerations to include aspects of human resource management.

4.4. Implications for public hospitals

These results suggest that, from a practical perspective, public hospitals should provide comprehensive training programs, with particular emphasis on DRG coding and documentation. The development of new roles highlights the need for strategic workforce planning and the need to explain the organizational change to the staff. At the policy level, the findings highlight issues for which the human resource implications of DRG system implementation should be considered. This mandates policymakers to restrict at least minimum training needs and provide relevant resources for building up required competencies within hospitals. Such implications suggest adopting various approaches to implement DRGs, balancing technical requirements with human resource considerations, to ensure operational efficiency and staff well-being.

4.5. Policy implications

The findings of this study have important implications for healthcare policymakers and administrators. The significant changes in job roles and skill requirements following the implementation of DRG systems highlight the need for comprehensive training programs tailored to the specific challenges DRG coding and documentation pose. Policymakers should consider establishing minimum training standards and providing resources to help hospitals adapt to these systems. Creating new roles within healthcare organizations necessitates strategic workforce planning to ensure effective integration into existing structures. By aligning technical requirements with human resource considerations, healthcare organizations can achieve greater operational efficiency and improve employee satisfaction and performance.

4.6. Recommendations for future research

When DRG systems are maturing, longitudinal designs will help track changes in human resource practices and staff adaptation. Further, in-depth qualitative research into staff experiences could yield richer insights into the challenges and successful adaptation strategies. Methodologically, future research could use more objective measures of coding accuracy and hospital performance to complement self-reported data. Another potential research area is the relationship between DRG implementation and patient outcomes. Such recommendations would improve this study's limitations and increase knowledge regarding the complex relationship between DRG systems, human resource management, and healthcare outcomes.

4.7. Limitations of the study

This study is subject to several limitations that should be acknowledged. Although diverse, the sample size of 70 respondents is relatively small, which may limit the generalizability of the findings. Future studies should aim to include a more extensive and varied sample to enhance the robustness of the data. Additionally, the cross-sectional design of this study provides only a snapshot in time, making it difficult to assess the long-term impacts of DRG implementation on human resource management. A longitudinal approach would be beneficial for capturing these long-term effects. Finally, the reliance on retrospective reflections from participants introduces potential recall bias, which could affect the accuracy of the reported data. Future research could employ real-time data collection methods to mitigate this bias and improve reliability.

5. Conclusions

The study has been very informative concerning the effects of DRGs on human resources in public hospitals. Key results show that DRGs have changed job content and skill profiles; half of the respondents reported changes in their daily activities, while another considerable group gained new skills. DRG systems are bringing about profound organizational changes, as evidenced by the creation of new roles in 42% of the organizations—the critical challenges of inadequate training and coding complexity present areas for improvement. There was also a complicated interrelationship between DRG familiarity, job satisfaction, and staff morale, suggesting that comprehensive training and supportive systems are vital to its success. Based on these findings, the key recommendation is that public hospitals should prioritize intensive training programs in DRG coding and documentation. Another central aspect of healthcare organizations would be making their workforce responsive and open to new roles and skill profiles introduced by DRG. Thirdly, to support hospitals in developing relevant competencies, policymakers should consider setting statutory minimum standards for training and resources.

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