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Making eldercare work visible on social media: A mixed-methods study of younger nursing assistants' posts and comment responses

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Abstract

Background: Nursing assistants' care skills and working conditions are often underrecognized. This study examined how younger nursing assistants presented institutional eldercare on Douyin and Xiaohongshu, associations between post features and displayed comment composition, and commenters' interpretations of skill-related content.

Methods:Using an explanatory sequential mixed-methods design, we analyzed 200 posts published in 2025 and 2,892 displayed top-level comments retrieved during

February–April 2026. Two multivariable Dirichlet–multinomial models examined post-level topic-frame and emotional-valence compositions, adjusting for platform and eight post features. Directed qualitative content analysis examined 306 comments from 24 purposively selected posts. Findings were integrated through a joint display.

Results: Skill demonstration was associated with both response domains. Compared with no skill demonstration, posts showing simple care actions had greater relative prominence of professional/informational versus supportive comments, whereas posts showing professional procedures had greater relative prominence of industry/system versus supportive comments. Both had lower relative prominence of positive versus neutral comments. Qualitative findings linked visible skills to appraisals of expertise, qualifications, safety, role boundaries, pay, staffing, and working conditions. Sensitivity analyses preserved association directions, although evidence for topic-frame differences varied by specification.

Conclusions: Making care skills visible was associated with more occupationally specific appraisal of eldercare work in displayed comments. Long-term care organizations should pair care procedures with information about training, professional judgment, safety responsibilities, teamwork, and working conditions.

Keywords: long-term care; nursing; nursing assistants; social media; occupational self-presentation; mixed-methods research.

1 Background

A rapidly aging population has increased the need for long-term care (LTC) for older adults with functional impairments and complex care needs[1]. In China, the institutional direct-care workforce is predominantly middle-aged or older. A survey of LTC homes in Zhejiang Province reported a mean caregiver age of 50.8 years, with only 8.3% aged 40 years or younger[2]. Most participants were women with limited formal education; low wages, insufficient pre-employment training, and long working hours were also common[2]. Workforce renewal is therefore important to the sustainability of institutional eldercare, which is also constrained by demanding physical and emotional labor, weak career pathways, and limited social recognition[3-5].

Existing research on nursing assistants in LTC settings has focused mainly on the workforce as a whole[6, 7]. Limited age-specific evidence suggests that younger and older nursing assistants may differ in factors associated with intention to stay and retention[8]. This literature identifies important workforce constraints, but offers limited insight into how younger nursing assistants make their work publicly visible or how commenters respond to different forms of occupational self-presentation. The present study focuses on nursing assistants aged 35 years or younger, representing a younger segment within this aging workforce.

Eldercare work is often performed away from public view, leaving its physical, relational, and emotional demands underrecognized[9, 10]. Public understandings of nursing-home life are therefore shaped partly by institutional communication, news

coverage, and online representations[11, 12]. Social media allows workers to present occupational experiences and users to respond through visible comments[13-16]. Such posts can make care practices visible while inviting judgments about professionalism, credibility, working conditions, and occupational value[10, 13-15]. Studies of nurses on Instagram, TikTok, and other platforms show that social media content can present professional roles, express work-related emotions, seek support, and generate public discussion[13, 14, 16]. However, this research has focused mainly on registered nurses, public health crises, e-professionalism, and health communication[13-17], whereas research on nursing assistants has concentrated on job characteristics and well-being[18]. It remains unclear which features of nursing assistants' posts are associated with different comment responses or how commenters interpret visible care skills. Making care skills visible may change both how favorably commenters respond and what they evaluate. Visible care practices give commenters specific grounds for appraising expertise, safety, role boundaries, and the conditions under which care is delivered. Examining topic frame and emotional valence separately therefore distinguishes general affective recognition from occupational appraisal. This relationship between visibility and recognition is also relevant to other direct-care occupations whose skilled work remains publicly obscured and socially undervalued[3, 4, 9, 10].

This study examined how younger nursing assistants presented institutional eldercare work on Douyin and Xiaohongshu and how that work was appraised in visible comments. The platforms were selected because their complementary formats

support different forms of occupational self-presentation. Douyin is centered on short videos, whereas Xiaohongshu accommodates both video and image-text posts[19]. Using an explanatory sequential mixed-methods design, we first examined associations of platform and eight observable post features with comment topic frame and emotional valence. We then used quantitatively informed qualitative analysis to explain how commenters interpreted skill-related content and integrated the two phases through a joint display. By linking occupational self-presentation with visible comment responses, the study examines how underrecognized direct-care work becomes visible and evaluated in public-facing online discussion.

2 Methods

2.1 Study design

This study employed a quantitatively driven explanatory sequential mixed-methods design[20]. This design was selected because the quantitative phase identified post-level patterns in visible comment composition, whereas the qualitative phase explained how commenters interpreted the occupational meaning of skill-related content. We first analyzed 200 posts and 2,892 displayed comments using post-level Dirichlet–multinomial models of topic frame and emotional valence. Quantitative findings then guided purposive sampling of 24 posts across platform and skill-demonstration strata; 306 comments were qualitatively analyzed to explain how commenters understood visible care skills. Skill demonstration linked the quantitative and qualitative phases by guiding qualitative sampling and interpretation. Findings from both phases were integrated in a joint display. The research process is illustrated in

Additional file 1: Figure S1. Reporting was informed by the Journal Article Reporting Standards for Mixed Methods Research[21].

2.2 Data source and collection

2.2.1 Data platforms

Data were collected from two Chinese social media platforms: Douyin, a short-video platform, and Xiaohongshu (RedNote), which supports both video and image–text posts[22]. The two platforms were selected before data collection because their different content formats provided complementary settings for examining occupational self-presentation. We included posts published from January 1 through December 31, 2025. Platform searches, eligibility screening, and comment extraction were conducted from February to April 2026, and comments were recorded as displayed at the time of extraction.

2.2.2 Keywords

Search terms were developed through preliminary searches to capture both formal occupational labels and colloquial platform language. The final search terms were “养老机构” (long-term care home), “养老院” (nursing home or eldercare institution), “护理员” (nursing assistant), “养老护理员” (eldercare nursing assistant), and “照护师” (caregiver). Additional colloquial and platform-based terms included “00 后护理员” (nursing assistants born in the 2000s), “95 后护理员” (nursing assistants born after 1995), “养老院日常” (daily life in a long-term care home), “护理员日常” (daily life of a nursing assistant), and “夜班” (night shift). Each term and its corresponding hashtag form were searched on both platforms. All searches were conducted using newly

registered research accounts and the platforms' default ranking. Search terms, search dates, and screening decisions were recorded.

2.2.3 Retrieval and screening of posts

For each platform, researchers reviewed each search term and hashtag in the default display order and applied identical eligibility criteria sequentially until 100 posts were included. Titles, captions, hashtags, on-screen and image–text content, biographies, and contextual information were considered when assessing the creator's role, age, and care setting. The prespecified 1:1 quota balanced cross-platform comparison with the workload of manual multimodal coding.

Posts were the sampling unit because the study examined occupational content encountered in default-ranked search results. Multiple posts from the same creator were retained without a creator-level quota because repeated appearances formed part of the observed pattern of content visibility.

In this study, nursing assistants were defined as frontline eldercare workers who provided direct daily care in institutional long-term care settings, including workers self-identifying as "护理员", "养老护理员", or equivalent care-worker roles. Posts were included if they met all of the following criteria: (1) the creator's role and institutional work setting could be established through the account profile, self-description, captions, hashtags, or repeated presentation of frontline care work; (2) the creator was aged 35 years or younger, as established from an explicitly stated age, year of birth, or self-identified generational category such as "00 后" or "95 后"; and (3) the focal post concerned professional life in institutional eldercare, including work

scenes, care tasks, routines, emotional experiences, occupational reflections, professional skills, career adaptation, or responses to public stereotypes. Visual appearance was not used to determine age eligibility.

Posts were excluded when the creator's age or frontline care-worker status could not be established from the publicly available sources described above. Posts were also excluded if they were duplicates, reposted or copied materials, unrelated to institutional eldercare work, or primarily focused on personal lifestyle without a clear occupational focus. Content from institutional official accounts, recruitment or training accounts, registered nurses, physicians, family caregivers, students without frontline nursing assistant work experience, and other non-target groups was excluded.

Posts primarily intended for product promotion, recruitment, course marketing, private traffic redirection, or institutional advertising were also excluded. Commercial exclusion was based on the content and purpose of the focal post rather than the presence of shopping links or other monetization features on the account.

Screening proceeded in two stages. Clearly irrelevant results were first excluded based on titles, captions, hashtags, and visible content. Potentially eligible posts were then manually assessed against the complete inclusion and exclusion criteria. One researcher led the search and screening of Douyin posts, a second researcher led the screening of Xiaohongshu posts. A third researcher participated in screening on both platforms to support consistent application of the eligibility criteria. Uncertain cases and disagreements were jointly reviewed by all three researchers and resolved through consensus.

2.2.4 Extraction of comments

Comments were extracted once between February and April 2026. For each post, up to the first 20 publicly accessible top-level comments in the platform's default display order were retained; creator comments and nested replies were excluded. Eligible comments were not re-sorted, and all were included when fewer than 20 were available. This cap limited the influence of highly commented posts and provided a consistent, visibility-oriented sample of comments displayed prominently at extraction.

All 2,892 comments were included in the descriptive summaries. Comments without an analyzable code were excluded only from the relevant outcome: 43 for topic frame and four for emotional valence. Valid comments were aggregated within each post into four-category count vectors, so each Dirichlet–multinomial model analyzed 200 post-level vectors. These vectors comprised 2,849 topic-frame and 2,888 emotional-valence comments; the corresponding multilevel sensitivity analyses used the same valid records.

2.3 Data analysis

2.3.1 Quantitative analysis

Coding framework and measures. Coders reviewed the text, images, and videos in the sampled posts and recorded post- and comment-level codes in Microsoft Excel. The analysis team, comprising three trained researchers, developed a structured coding framework for both post-level and comment-level data, informed by our research aims, previous studies of health professions on social media, and preliminary review of sampled posts and comments[16, 23]. Preliminary review of material from

both platforms was used to refine the category definitions and add humor and music before the framework was finalized for formal coding. Posts and comments were coded separately: each post constituted one post-level coding unit, and each comment constituted one comment-level coding unit.

Post-level codes captured observable ways in which younger nursing assistants presented eldercare work. These included professional attire, skill demonstration, physically demanding or intimate bodily care tasks, stress expression, professional pride or work meaning, response to prejudice, humor, music, and main scene. Skill demonstration was coded as no skill demonstration, simple care-related actions, or professional procedure demonstration. Classification as professional procedure demonstration required a visibly demonstrated professional care procedure; occupation-specific terminology without a visible procedure did not meet this criterion. Platform, post type, duration, like count, and comment count were also recorded as descriptive post characteristics.

Comment-level coding covered topic frame, emotional valence, and civility. Topic-frame categories were initially coded as empathic or supportive responses, professional or informational discussion, industry- or system-related discussion, skepticism about authenticity or motives, and attacking or derogatory responses. Before modeling, the skepticism and attacking or derogatory categories were combined into a single skeptical/attacking category because of sparse counts. Emotional valence distinguished positive, neutral, negative, and mixed responses. Civility was coded for descriptive purposes. Each coding dimension was assessed independently. A comment

could therefore receive a valid code for one dimension while being classified as non-substantive or unclassifiable in another. Non-substantive or unclassifiable responses were recorded separately within the relevant coding dimension and omitted only from the corresponding outcome counts. Table 1 presents the original coding categories; categories collapsed for the primary models are specified below.

Coding procedure and reliability. Before formal coding, the research team conducted pilot coding on 10 posts and their associated comments from both platforms. The pilot material was excluded from the final analytic sample. During the pilot phase, the team refined category definitions, clarified category boundaries, and developed decision rules for ambiguous posts and comments. All coders were trained using the finalized codebook and discussed coding examples to establish a shared understanding of the coding criteria.

Intercoder reliability was assessed using a platform-stratified sample of 30 posts, representing 15% of the final post sample, with 15 posts randomly selected from each platform. Two coders (HQ and JD) independently coded the same 30 posts and all 510 retained comments associated with these posts[24]. The comments were pooled across platforms and presented to both coders in random order, ensuring that both coders assessed comments from Douyin and Xiaohongshu. Intercoder reliability was calculated for each categorical coding variable from the independent, pre-consensus codes using unweighted Cohen's kappa (κ)[24]. For post-level variables, κ values ranged from 0.850 to 1.000. For comment-level variables, κ values ranged from 0.957 to 1.000. Detailed intercoder reliability results are presented in Additional file 1: Table

S1. After the reliability coefficients had been calculated, disagreements were discussed by the two coders. Cases that remained unresolved were adjudicated by a senior researcher, and the agreed codes were entered into the final analytic dataset[25].

Following the reliability assessment, the remaining posts and comments were coded using the finalized codebook. One coder primarily coded Douyin material, another primarily coded Xiaohongshu material, and a third coded material from both platforms. Ambiguous cases were discussed by the three coders until consensus was reached. Before analysis, the research team verified platform and post identifiers, coding ranges, and post–comment linkage.

Statistical analysis. Descriptive statistics summarized post characteristics and comment categories, overall and by platform. Categorical variables were summarized as frequencies and percentages; skewed engagement variables were summarized as medians and interquartile ranges.

For the primary analyses, valid comment-level outcome codes were aggregated within each post to form separate four-category count vectors for topic frame and emotional valence. Two multivariable Dirichlet–multinomial regression models were fitted to these counts, with the 200 posts as the primary analytical units. These models were used as the primary analyses because post features were measured at the post level and the estimand was the composition of comments within each post. The Dirichlet–multinomial distribution allowed for overdispersion in the category counts[26]. Comment-level multilevel models were subsequently used to examine the

sensitivity of the findings to an alternative analytical specification.

The topic-frame model included supportive comments as the reference category and professional/informational, industry/system, and skeptical/attacking comments as comparison categories. The emotional-valence model used neutral comments as the reference category and included positive, negative, and mixed comments. Both models included platform and eight post features: professional attire, skill demonstration, physically demanding or intimate bodily care, stress expression, professional pride or work meaning, response to prejudice, humor, and music. Skill demonstration had three levels: none, simple care-related actions, and professional procedure demonstration. The other post features were modeled as absent or present, while their original categories were retained descriptively. Douyin and absence were the reference levels. Main scene and post type were excluded because some levels were sparse or platform-specific. Post-level cell counts are provided in Additional file 1: Table S4.

Category-specific coefficient contrasts were exponentiated and reported as adjusted relative risk ratios (RRRs) with 95% Wald confidence intervals (CIs). Each RRR represents the change in the expected proportion ratio of a given response category to the reference category between predictor levels, holding the other model covariates constant. Omnibus Wald tests jointly assessed the association of each predictor with the distribution of each outcome. Nine predictors were tested in each model, giving 18 omnibus tests across the two outcomes. The Benjamini–Hochberg procedure was applied across these 18 tests, with $q < 0.05$ indicating statistical

support after false discovery rate correction[27]. Contrast-level CIs and p values were not multiplicity-adjusted and were interpreted only when the corresponding omnibus test met the $q < 0.05$ threshold.

Sample-standardized probabilities aided interpretation of skill demonstration. For each skill level, response probabilities were predicted for all 200 observed post profiles while retaining their observed platform and other post features, then averaged with equal weight assigned to each post[28]. Pointwise 95% CIs were obtained from 5,000 draws from the estimated multivariate normal distribution of the coefficients. Model adequacy was assessed using convergence and the information matrix; rank, variance inflation factors, and condition indices were examined for the fixed-effect design matrix[29].

Sensitivity analyses included: (1) comment-level multilevel multinomial models with post-level random intercepts and an unstructured category-specific covariance matrix; (2) equal-post fractional multinomial models[30]; (3) a model combining mixed and neutral emotional-valence comments; (4) equal-post skill demonstration-by-platform interaction tests; (5) separate platform estimates from each coder's independent classifications of the same 510 comments from the 30 double-coded posts, using 5,000 platform-stratified post-level bootstrap samples; and (6) reduced Dirichlet–multinomial models containing skill demonstration and platform, evaluated using 1,000 post-level nonparametric bootstrap samples[31].

Descriptive statistics were calculated in SPSS 27. All regression models, standardized probabilities, diagnostic analyses, and sensitivity analyses were

conducted in R version 4.6.1. Dirichlet–multinomial models were fitted using MGLM version 0.2.3[32], multilevel multinomial models using mclogit version 0.9.15, and fractional multinomial models using nnet version 7.3-20. The random seed was set to 20260916.

2.3.2 Qualitative analysis

Following the quantitative analysis, a quantitatively informed purposive subsample was selected for in-depth qualitative analysis[20, 33]. Sampling was stratified by platform and level of skill demonstration: no skill demonstration, simple care-related actions, and professional procedure demonstration. Four posts were selected from each of the six platform-by-skill strata, yielding 24 posts. Selection was based on the observed post-level distributions of topic frame and emotional valence. Within each stratum, the four cases comprised the post with the smallest Euclidean distance from the stratum centroid across the eight response proportions, the post with the highest summed Shannon entropy across the topic-frame and emotional-valence distributions, and two posts at opposite ends of a contrast score calculated as the combined proportions of professional/informational, industry/system, and neutral responses minus the combined proportions of supportive and positive responses. Each post was selected only once within its stratum. Case selection was completed before qualitative coding and theme development. All retained top-level comments associated with these posts were included, resulting in 306 comments. The individual comment was the unit of qualitative analysis, and the corresponding post provided the context for interpretation.

The Chinese-language comments were analyzed using directed qualitative content analysis, with the initial deductive framework refined inductively as analysis progressed[23, 34]. The quantitative topic and emotional-valence codes provided an initial sensitizing framework for the analysis. Comments were read in the context of their focal posts. Relevant meaning units were assigned provisional subcodes, and conceptually related subcodes were then grouped into higher-order explanatory themes. Theme definitions and boundaries were refined through iterative comparison across platforms, skill-demonstration levels, and contrasting response profiles, and by repeatedly returning to the original comments and their focal posts. The primary qualitative analysis was conducted by HQ, a postgraduate nursing researcher with prior qualitative research experience. The primary analyst's nursing background sensitized the analysis to professional skill, care safety, and workforce conditions. Reflexive and analytic memos documented interpretive decisions and assumptions arising during coding. Provisional subcodes and theme boundaries were examined against contrasting comments and their focal-post contexts, and ambiguous interpretations were reviewed by the research team before the themes were finalized. The analysis used publicly accessible material and involved no interaction with account holders or commenters. Each comment was assigned to one of the four interpretive themes or categorized as other/unclear, and relevant secondary subcodes were recorded. Comments categorized as other/unclear were retained in the qualitative dataset but did not contribute to the definition of the four themes.

After primary coding was completed, a sample of 72 comments, comprising

three comments from each of the 24 posts, was randomly selected and recoded using GPT-5.6 Sol (OpenAI Codex; accessed September 1, 2026) as an AI-assisted concordance assessment[35]. The model was provided with the codebook used for primary coding and anonymized comment text, but not the researcher's theme assignments, the existing quantitative topic-frame and emotional-valence codes, or the focal-post context. The researcher-authored prompt stated: "Using the supplied codebook, assign each anonymized Chinese social media comment to one primary category: moral and relational recognition; occupational navigation and professional boundaries; labor conditions and experience-based counter-narratives; embodied, safety, and ethical scrutiny; or other/unclear. Apply the definitions and boundary rules in the codebook, do not create additional themes, and return the comment identifier, primary category, relevant subcode or subcodes, and a brief coding rationale. Base the assignment only on the comment text provided." Agreement between the researcher's coding and the AI-assisted recoding was assessed before discrepancy review using exact percentage agreement and unweighted Cohen's kappa. Pointwise 95% CIs for both measures were estimated from 5,000 bootstrap resamples clustered at the post level[25, 36]. Because the model coded comment text without focal-post context, the assessment examined concordance in the application of comment-level theme definitions. Discrepant cases were independently reviewed by two researchers against the codebook, original comment, and focal-post context, and final codes were assigned by consensus. Agreement results are reported in Additional file 1: Table S1. Final coding and interpretation were completed by the research team.

An audit trail of codebook versions, case-level coding records, boundary decisions, analytic memos, the researcher-authored AI prompt, model outputs, and discrepancy review decisions was maintained throughout the analysis[37, 38]. Illustrative comments were presented as concise paraphrases with identifying details removed, and the English wording was checked against the original Chinese meaning[39]. The final four themes, operational definitions, and indicative subcodes are presented in Table 1.

2.3.3 Mixed-methods integration

The quantitative and qualitative phases were integrated at three points: sampling, comparison, and interpretation[20, 40]. First, the quantitative results guided qualitative sampling by platform, skill-demonstration level, and post-level distributions of topic frame and emotional valence, thereby connecting the two phases. Second, adjusted estimates and descriptive response patterns were combined with qualitative themes and paraphrased examples in a statistics-by-themes joint display[20, 41]. Third, the research team compared the two strands to identify convergence, extension, and divergence and developed the integrated interpretation from these relationships. Quantitative patterns established how visible comment compositions differed, while the qualitative findings explained how commenters appraised expertise, safety, role boundaries, and working conditions.

2.4 Ethical considerations

Ethical approval was granted by the Ethics Committee of the Medical College of Qingdao University (Approval No. QDU-HEC-2025492). Under the approved

protocol, individual informed consent was not required because the study involved publicly accessible social media content, no direct interaction with users, and no access to private data. The study analyzed publicly accessible social media posts and top-level comments without contacting users or accessing private content. Data collection and reporting followed the Association of Internet Researchers' Internet Research: Ethical Guidelines 3.0 concerning contextual privacy, potential harm, and the traceability of user-generated content[42]. Direct and contextual identifiers were removed and replaced with study identifiers before analysis. Only de-identified comment text was used for AI-assisted recoding. Illustrative comments were paraphrased and checked against the original Chinese meaning. Older residents appearing in the source posts had already been visually obscured, and no unmasked resident images were retained in the analytic materials. Source videos and post links were retained for coding and verification, but no resident images, identifiable screenshots, or readily searchable verbatim quotations are reproduced in the manuscript or supplementary materials.

3 Results

3.1 Quantitative findings

3.1.1 Characteristics of sampled posts and comments

The analysis included 200 posts, with 100 from each platform, of which 189 (94.5%) were videos. The median number of likes was 516, with an interquartile range of 214–1,716 and an overall range of 28–150,000. The median displayed comment count was 102, with an interquartile range of 38–298 and an overall range of 7–25,000.

Professional attire was continuously visible in 143 posts (71.5%), and some form of skill demonstration was present in 93 posts (46.5%). Skill demonstration was observed in 69 Douyin posts and 24 Xiaohongshu posts.

Among the 2,892 comments, 1,465 (50.7%) were supportive/empathic, 753 (26.0%) industry/system, and 486 (16.8%) professional/informational. Emotional valence was predominantly positive (n = 1,369, 47.3%) or neutral (n = 1,078, 37.3%). Professional/informational comments accounted for 28.9% of Douyin and 4.6% of Xiaohongshu comments, whereas supportive/empathic comments accounted for 41.1% and 60.3%, respectively. Platform-specific distributions and valid comment counts are reported in Table 2.

3.1.2 Associations between post features and comment responses

Both adjusted Dirichlet–multinomial models converged with positive-definite information matrices. The fixed-effect design matrix contained 11 columns, including the intercept, and was full rank. The maximum variance inflation factor was 1.54, and the maximum condition index was 2.33.

The topic-frame model analyzed 200 post-level count vectors derived from 2,849 valid comment codes. Skill demonstration (Wald $\chi^2(6) = 25.46$, $p < 0.001$, $q = 0.003$) and platform (Wald $\chi^2(3) = 71.27$, $p < 0.001$, $q < 0.001$) were associated with topic-frame distribution (Table 3). Compared with no skill demonstration, simple care actions were associated with higher relative risks of professional/informational (RRR = 2.14, 95% CI = 1.33–3.44) and industry/system comments (RRR = 1.96, 95% CI = 1.30–2.95) versus supportive comments. Professional procedure demonstration showed

the same pattern for professional/informational (RRR = 2.72, 95% CI = 1.28–5.79) and industry/system comments (RRR = 3.29, 95% CI = 1.67–6.48). Compared with Douyin, Xiaohongshu had a lower relative risk of professional/informational comments (RRR = 0.17, 95% CI = 0.10–0.29) and higher relative risks of industry/system (RRR = 1.73, 95% CI = 1.14–2.63) and skeptical/attacking comments (RRR = 2.12, 95% CI = 1.10–4.07) versus supportive comments. No other post feature met the FDR-adjusted threshold.

The emotional-valence model analyzed 200 post-level count vectors derived from 2,888 valid comment codes. Skill demonstration (Wald $\chi^2(6) = 19.44$, $p = 0.003$, $q = 0.016$) and platform (Wald $\chi^2(3) = 17.31$, $p < 0.001$, $q = 0.004$) were associated with emotional-valence distribution (Table 3). Compared with no skill demonstration, simple care actions and professional procedure demonstration were associated with lower relative risks of positive versus neutral comments (RRR = 0.49, 95% CI = 0.33–0.72; RRR = 0.30, 95% CI = 0.15–0.59, respectively). Compared with Douyin, Xiaohongshu had lower relative risks of positive (RRR = 0.62, 95% CI = 0.41–0.93) and negative comments (RRR = 0.37, 95% CI = 0.21–0.66) versus neutral comments. No other post feature met the FDR-adjusted threshold. Complete estimates for all adjustment variables are provided in Additional file 1: Table S2.

Across no skill demonstration, simple care actions, and professional procedure demonstration, the standardized probability of supportive comments decreased from 57.1% to 42.7% and 32.5%, while that of industry/system comments increased from 22.1% to 32.3% and 40.8%, respectively (Figure 1). Across the same levels, the probability of positive comments decreased from 52.5% to 38.4% and 28.3%, while

that of neutral comments increased from 31.6% to 46.3% and 54.7%. The probability of negative comments remained similar across the three levels, at 11.3%, 9.6%, and 12.1%, respectively.

3.1.3 Sensitivity analyses

In the comment-level multilevel models, platform met the FDR-adjusted threshold for both outcomes, and skill demonstration met this threshold for emotional valence. For topic frame, the omnibus test for skill demonstration was nominally statistically significant ($p = 0.011$) but did not meet the FDR-adjusted threshold ($q = 0.0502$; Additional file 1: Table S3). All six focal equal-post RRRs were in the same direction as the primary estimates, although five of the six 95% CIs included 1. In the collapsed-outcome analysis, the omnibus tests for skill demonstration and platform both yielded $p < 0.001$, whereas professional attire yielded $p = 0.028$; these sensitivity-test p values were not multiplicity-adjusted. The skill demonstration-by-platform interaction tests were not statistically significant for topic frame ($p = 0.831$) or emotional valence ($p = 0.655$).

Across all eight response categories in the double-coded subset, the Xiaohongshu–Douyin differences had the same direction for both coders. The largest absolute difference involved professional/informational comments: −36.8 percentage points for Coder 1 and −35.5 percentage points for Coder 2. Topic-frame unclassifiable counts for Douyin and Xiaohongshu were 12 and 0 for Coder 1 and 11 and 0 for Coder 2. The reduced post-level bootstrap models reproduced the decreasing probabilities of supportive and positive comments and the increasing probabilities of industry/system

and neutral comments across skill-demonstration levels. Of the 1,000 bootstrap samples, 992 topic-frame models and 958 emotional-valence models produced valid estimates. Sensitivity-analysis results are presented in Additional file 1: Table S3.

3.2 Qualitative findings

The qualitative analysis included 306 comments from 24 posts. Of these, 280 were organized into four substantive themes: moral and relational recognition (n = 83), occupational navigation and professional boundaries (n = 71), labor conditions and experience-based counter-narratives (n = 90), and embodied, safety, and ethical scrutiny (n = 36). The remaining 26 comments were coded as other or unclear and were not included in the thematic interpretation. Table 1 presents the qualitative themes and indicative subcodes; Table 4 integrates them with the quantitative findings.

In the 72-comment concordance sample, exact agreement between the researcher and AI-assisted coding was 86.1% (62/72; 95% CI = 77.8%–93.1%), and Cohen's κ was 0.817 (95% CI = 0.703–0.908). These estimates were calculated before discrepancy review. Final codes were assigned by the research team.

3.2.1 Moral and relational recognition.

Comments continued to recognize the dignity and relational value of nursing-assistant work. Some defended the occupation against the view that intimate care was degrading: *Care work is honest work; there is no shame in earning a living through one's own effort* (C202, Xiaohongshu). Others associated the work with patience, kindness, and concern for older adults: *Only someone with patience and*

compassion could continue doing this work (C234, Xiaohongshu). Commenters with related family or occupational experience also offered encouragement, connecting individual workers with a wider community familiar with the demands of care.

3.2.2 Occupational navigation and professional boundaries.

Posts also became a source of practical occupational information. Comments addressed qualifications, training, recruitment, career entry, job responsibilities, and opportunities for advancement. Some commenters asked about formal requirements: *Is a nursing-assistant certificate required for an internship in a care home?* (C238, Xiaohongshu). Others considered whether the necessary skills could be learned on the job: *I have no previous care experience, but could I learn to do this work?* (C225, Xiaohongshu). Recruitment questions were often direct: *Are you still hiring? I hold both a nursing qualification and an eldercare nursing-assistant certificate* (C010, Douyin). Another commenter asked: *Would you recruit someone without previous experience who is changing careers?* (C299, Xiaohongshu).

Questions about daily duties exposed uncertainty about what nursing-assistant work involved. One commenter asked: *What would a young person with an eldercare certificate actually be expected to do?* (C019, Douyin). Others wanted to know whether bathing, continence care, feeding, tube-related care, and nighttime monitoring fell within the role. These questions showed that occupational interest was often conditional on understanding the physical demands and scope of the work. Professional boundaries were particularly unclear. One response asked: *Are nursing assistants and nurses the same role?* (C093, Douyin). Another questioned: *Are*

social-work and activity-planning positions separate jobs or combined within the same institution? (C295, Xiaohongshu). Some commenters observed that the worker shown appeared to be undertaking direct care, nursing-related tasks, cleaning, emotional support, and logistical duties at the same time. The comments provided practical occupational guidance while revealing uncertainty about training pathways, job titles, and divisions of responsibility within institutional eldercare.

3.2.3 Labor conditions and experience-based counter-narratives.

The most extensive theme concerned the conditions under which nursing-assistant work was performed. Comments examined pay, working hours, night shifts, workload, staffing, benefits, and staff retention. Working arrangements were often assessed in terms of whether they could be sustained. One commenter reported: *I work ten-hour days and sometimes cover night shifts* (C182, Xiaohongshu). Another distinguished between manageable and excessive hours: *Eight or nine hours might be acceptable, but a 12-hour shift would be too exhausting* (C128, Douyin). Pay was evaluated in relation to the demands of care. One commenter observed: *Young people who work steadily in this field are uncommon, but the income seems somewhat low* (C215, Xiaohongshu).Workload and staffing were recurring concerns. Some commenters asked how many residents one nursing assistant was expected to support: *How many older adults does one worker actually care for during a shift?* (C197, Xiaohongshu). Others connected heavy workloads with difficulties in retaining staff: *New workers at our facility rarely stay for long* (C198, Xiaohongshu). Personal experiences of leaving the occupation provided a stronger form of counter-narrative: *I*

left after only half a month of placement (C060, Douyin).

Comments grounded in occupational experience also tested the portrayals presented in the posts against conditions elsewhere. A typical comparison was: *I also work in a care home, but conditions at my workplace are not like those shown here* (C177, Douyin). Other commenters compared salaries, night-shift arrangements, numbers of residents, and the range of duties performed by one worker. Commenters used first-hand experience to assess how closely the displayed working conditions resembled routine practice. A smaller group considered the future of the occupation. Population aging and rising demand for institutional eldercare were viewed as creating opportunities for employment and career development: *Demand for eldercare will continue to grow, and more young workers will enter the field* (C213, Xiaohongshu). Some comments described younger workers as important to the future of the sector and envisioned progression from frontline care into team leadership or service management. This theme encompassed both immediate employment conditions and the longer-term development of the occupation.

3.2.4 Embodied, safety, and ethical scrutiny.

A smaller but distinct theme concerned the bodily, safety, and ethical demands of care. Commenters considered whether they could tolerate continence care, bathing, odors, lifting, and repeated encounters with illness or death: *How do people become accustomed to dealing with urine and feces in this work?* (C187, Xiaohongshu). Other responses examined visible care practices. Concerns about bed-rail use, lighting, protective equipment, and adjustable beds reflected attention to both resident safety

and workers' physical health. For example, one commenter observed: *Leaving the bed rail down at night could place the resident at risk* (C277, Xiaohongshu). These comments evaluated occupational suitability alongside the safety and quality of the care shown.

3.3 Integration of quantitative and qualitative findings

Both strands showed compositional differences across skill-demonstration levels (Table 4). From no skill demonstration to simple actions and professional procedures, supportive probabilities decreased from 57.1% to 42.7% and 32.5%, and positive probabilities from 52.5% to 38.4% and 28.3%. Industry/system probabilities increased from 22.1% to 32.3% and 40.8%, and neutral probabilities from 31.6% to 46.3% and 54.7%. Qualitative findings linked these shifts to questions about qualifications, role boundaries, workload, staffing, pay, and differences between displayed and experienced working conditions.

Neutral comments often involved active information seeking about certification, recruitment, duties, and role boundaries. Industry/system comments focused on staffing, pay, workload, and institutional support. These patterns showed that visible care practices prompted occupational as well as affective appraisal. Qualitative analysis also identified practice-focused scrutiny centered on intimate bodily care, infection control, fall prevention, emotional strain, and ethical responsibility. Platform was associated with both response domains. Compared with Douyin, Xiaohongshu comments had a lower relative risk of being professional/informational rather than supportive and a lower relative risk of being negative rather than neutral. Within the

purposively selected qualitative cases, Xiaohongshu discussions more often foregrounded bodily boundaries and care safety, whereas Douyin discussions more often drew on workplace experience when evaluating labor conditions.

4 Discussion

The principal finding was that skill demonstration was associated with the composition of visible comments on younger nursing assistants' work. Compared with posts without skill demonstration, posts showing simple care actions or professional procedures had greater relative prominence of professional/informational and industry/system comments and lower relative prominence of positive versus neutral comments. Sensitivity analyses generally preserved these directions, although statistical support for the topic-frame association weakened under some alternative specifications. Previous studies have shown that nurses use social media to present their professional identities, share knowledge, and communicate work-related emotions[14, 16]. A mixed-methods study of nurses on Instagram found that knowledge-focused profiles attracted fewer comments than profiles centered on professional values and beliefs[14]. Research in residential aged care has similarly shown that much of care workers' physical, emotional, and relational skill remains hidden and underrecognized[9]. In the present study, commenters paired general praise with questions about qualifications, role boundaries, working conditions, and care safety. Similar links between individual work experiences and organizational conditions have been reported in nursing-related social media discourse[13]. Skill-related content was associated with a more differentiated appraisal of eldercare

as skilled work.

The models estimate the relative composition of comments within each coding domain; lower shares of supportive and positive comments therefore corresponded to greater relative prominence of other categories. Many neutral comments were substantive and addressed training, qualifications, daily tasks, pay, and role boundaries. These responses distinguish affective recognition of the worker from occupational recognition of the expertise, judgment, training, and organizational support that care requires. Positive sentiment can indicate a favorable public image of nursing[43], yet research on "hero" and "angel" narratives shows that admiration can leave occupational autonomy, pay, workplace safety, and professional development less visible[44]. This tension is especially relevant to LTC, which is associated with bodily "dirty work" and low occupational status[4], while many of its skills remain hidden[9]. Posts showing care techniques gave commenters specific material for evaluating competence, safety, training, workload, and support. Brief posts, however, rarely showed the preceding assessment, residents' preferences, supervision, teamwork, or institutional constraints. Professional visibility therefore brought both occupational recognition and scrutiny of workers' competence and legitimacy, consistent with research on digital professionalism[15]. Explaining the context of care may therefore be as important as displaying the procedure itself.

Platform remained associated with comment composition after adjustment, indicating between-platform differences within the sampled posts. Descriptively, Xiaohongshu had a higher proportion of positive comments and a lower proportion of

neutral comments than Douyin. After adjustment, however, Xiaohongshu showed a lower relative risk of positive versus neutral comments. The adjusted contrast accounted for skill demonstration and the other post features, which were unevenly distributed across platforms; for example, 76% of Xiaohongshu posts and 31% of Douyin posts showed no skill demonstration. The descriptive proportions and adjusted estimates therefore address different questions. In the double-coded subset, both coders produced unadjusted platform contrasts in the same direction, supporting coding consistency within those 30 posts rather than independently confirming the adjusted platform estimate. Platform differences may reflect commenter composition, recommendation systems, interaction norms, or unmeasured differences in posts and creators. Distinguishing these explanations requires direct examination of platform mechanisms.

Respect for nursing assistants coexisted with criticism of their employment conditions. Viewers praised patience, dignity, and commitment, while raising questions about pay, shift patterns, staffing, workload, and opportunities for career development. A similar tension arose during the COVID-19 pandemic, when nurses received public recognition despite inadequate resources and limited influence over their working conditions[45]. For nursing assistants in LTC facilities, well-being and retention depend on manageable physical and emotional demands, adequate financial reward, opportunities for professional development, sufficient staffing, and organizational support[18, 46, 47]. Public communication about LTC work should therefore pair care procedures with information about training, qualifications, role

boundaries, safety, teamwork, supervision, and working conditions. At the practice level, LTC organizations and training bodies can use this context to clarify professional judgment, safety responsibilities, and role boundaries. At the policy level, efforts to strengthen occupational recognition should be aligned with transparent competency standards, adequate staffing, fair compensation, and viable career pathways. Visible comments can identify information gaps for future workforce research, while questions about recruitment and retention require direct evidence from workers and organizations.

4.1 Strengths and limitations

This study combined post-level Dirichlet–multinomial modeling with quantitatively informed qualitative sampling and mixed-methods integration. Aggregating comment outcomes into post-level count vectors aligned inference with the post-level exposures, and Dirichlet–multinomial models accommodated overdispersion. Robustness was examined using multilevel, equal-post, collapsed-outcome, interaction, double-coded, and post-level bootstrap analyses. Quantitative intercoder agreement was high, and qualitative concordance was assessed independently before discrepancy review. Returning to focal posts during qualitative analysis provided contextual explanations for the quantitative patterns.

The sampling design defines the scope of inference. Posts were drawn from default-ranked search results, and up to 20 top-level comments were retained in their displayed order. The findings therefore describe the sampled content rather than platform-wide prevalence. Multiple posts from the same creator could be included,

and dependence between posts from the same creator remained unmodeled. Repeated commenting by the same user across posts could not be assessed after account identifiers were removed. The professional procedure demonstration category contained 16 posts, and several original post-feature levels were sparse or platform-specific, reducing the precision of the corresponding estimates.

Age and occupational status were established from publicly visible profiles and self-descriptions. Skill coding described the content visible in each post rather than workers' qualifications, competence, or quality of care. The study focused on nursing assistants aged 35 years or younger and did not include an older comparison group. The models estimated adjusted associations rather than causal effects. Qualitative interpretation was based on 24 purposively selected posts and 306 comments. The AI-assisted concordance assessment used de-identified comment text without focal-post context, while final interpretation remained with the research team. The findings apply most directly to public occupational presentations and displayed comments on Douyin and Xiaohongshu during the study period.

5 Conclusions

This mixed-methods study examined how younger nursing assistants presented institutional LTC work on Douyin and Xiaohongshu and how this work was appraised in displayed comments. Skill-related posts were associated with greater relative prominence of occupationally specific discussion of professional knowledge and industry conditions and lower relative prominence of positive versus neutral comments. Qualitative findings linked these patterns to expertise, qualifications, safety, role

boundaries, pay, staffing, and working conditions. Public communication can provide a fuller account of institutional eldercare by presenting both care expertise and the conditions supporting safe and sustainable practice.

List of abbreviations

AI: Artificial intelligence; BH: Benjamini–Hochberg; CI: Confidence interval; FDR: False discovery rate; IQR: Interquartile range; LTC: Long-term care; RRR: Relative risk ratio.

Declarations

Ethics approval and consent to participate

Ethical approval was granted by the Ethics Committee of the Medical College of Qingdao University (Approval No. QDU-HEC-2025492). Under the approved protocol, individual informed consent was not required because the study involved the analysis of publicly accessible social media content, no direct interaction with users, and no access to private data.

Consent for publication

Not applicable. The manuscript contains no identifiable individual information, images, screenshots, or verbatim quotations.

Availability of data and materials

The de-identified derived post-level count data, finalized coding framework, and R analysis scripts supporting the findings are available from the corresponding author upon reasonable request. The qualitative coding framework, illustrative coding pathways, and researcher-authored AI prompt are included in the article and its

additional file. Original posts, comments, videos, account information, and source links are not publicly available because their redistribution could enable the identification of social media users.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

HQ: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Software, Visualization, Writing – original draft, Writing – review and editing.

JD: Investigation, Data curation, Validation, Writing – review and editing.

HH: Investigation, Data curation, Validation, Writing – review and editing.

YP: Validation, Visualization, Writing – review and editing.

YS: Conceptualization, Methodology, Funding acquisition, Project administration, Resources, Supervision, Validation, Writing – review and editing.

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882

883 Table 1. Coding framework for post characteristics, comment responses, and qualitative themes

Variable or theme	Operational definition	Coding categories or indicative subcodes
Post-level quantitative codes		
Likes	Number of likes received by the post	Continuous
Comments	Number of comments displayed for the post	Continuous
Duration	Length of the post	Continuous, seconds
Professional attire	Whether the creator appeared in professional attire, such as a uniform, badge, or other work-related clothing	0 = not present; 1 = briefly present; 2 = continuously present
Skill demonstration	Whether the post visibly showed care-related actions or professional care procedures	0 = no skill demonstration; 1 = simple care-related actions; 2 = professional procedure demonstration
Physically demanding or intimate bodily care tasks	Whether the post showed or described physically demanding or close bodily care	0 = not present; 1 = briefly present; 2 = clearly presented
Stress expression	Whether the post expressed or indicated work-related stress	0 = not present; 1 = briefly or indirectly present; 2 = clearly present
Professional pride or work meaning	Whether the post expressed pride in the occupation or a sense of meaning in the work	0 = not present; 1 = briefly or indirectly present; 2 = clearly present
Response to prejudice	Whether the post responded to stereotypes, misunderstandings, or stigmatizing views of eldercare work	0 = not present; 1 = indirectly present; 2 = explicitly present
Humor use	Whether the post used humor, self-mockery, irony, or related strategies	0 = not present; 1 = present but not central; 2 = major expressive strategy; levels 1 and 2 were combined as present in the regression models
Music use	Whether the post used background music	0 = not present; 1 = present

Variable or theme	Operational definition	Coding categories or indicative subcodes
Main scene	Primary setting based on scene duration and narrative focus	1 = institutional work area; 2 = institutional public area; 3 = staff rest area; 4 = commuting; 5 = home or private space; 6 = talking head or no clear scene; 7 = other
Platform	Social media platform on which the post was published	1 = Douyin; 2 = Xiaohongshu
Post type	Format of the post	1 = video; 2 = image-text
Comment-level quantitative codes		
Civility	Whether the comment was expressed in a respectful or offensive manner	1 = civil; 2 = offensive; 3 = unable to determine or non-substantive
Emotional valence	Overall emotional tone of the comment	1 = positive; 2 = neutral; 3 = negative; 4 = mixed; 5 = unable to determine or non-substantive
Topic frame	Primary topic reflected in the comment	1 = empathic or supportive; 2 = professional or informational; 3 = industry- or system-related; 4 = skepticism about authenticity or motives; 5 = attacking or derogatory; 6 = unable to determine
Qualitative thematic codebook		
Moral and relational recognition	Recognition of the dignity, moral value, and relational contribution of nursing-assistant work	Respect for honest work; patience and compassion; defense against occupational stigma; encouragement based on family or occupational experience
Occupational navigation and professional boundaries	Information seeking about entry into the occupation, training requirements, job content, and role boundaries	Qualifications and certification; training and career entry; recruitment and career pathways; daily duties; distinctions between nursing assistants, registered nurses, social workers, and other roles
Labor conditions and experience-based counter-narratives	Evaluation of employment and organizational conditions, often informed by commenters' work experience	Pay and benefits; working hours and night shifts; workload and staffing; staff retention; comparisons with other institutions; occupational sustainability and career

Variable or theme	Operational definition	Coding categories or indicative subcodes
		development
Embodied, safety, and ethical scrutiny	Appraisal of the bodily demands, safety requirements, care quality, and ethical responsibilities involved in eldercare	Intimate bodily care; lifting and physical demands; infection control and protective equipment; fall prevention; resident safety and care quality; emotional strain and ethical responsibility
Other or unclear	Comments with insufficient occupational relevance or contextual information for thematic interpretation	Retained in the qualitative sample denominator but excluded from development and interpretation of the four substantive themes

Note. Each qualitative comment was assigned one primary category: one of the four interpretive themes or other/unclear. Indicative subcodes define the content boundaries of each theme and were not analyzed as separate outcomes. Comments coded as other or unclear were retained in the qualitative sample denominator but did not contribute to the four substantive themes. Like count, displayed comment count, video duration, post type, and main scene were treated as descriptive characteristics and were not included as predictors in the multivariable models.

889 Table 2. Characteristics of sampled posts and comments, overall and by platform

Variable	Category or statistic	Overall	Douyin	Xiaohongshu
Post characteristics (N = 200; Douyin n = 100, Xiaohongshu n = 100)				
Likes	Median (IQR)	516 (214–1,716)	404 (137–1,019)	771 (269–6,461)
	Range	28–150,000	28–150,000	36–65,000
Comments	Median (IQR)	102 (38–298)	69 (28–176)	148 (51–572)
	Range	7–25,000	10–25,000	7–6,667
Duration (video only)	Median (IQR)	56 (10–115)	90 (49–138)	11 (8–67)
	Range	5–496	9–496	5–430
Post type	Video	189 (94.5)	98 (98.0)	91 (91.0)
	Image-text	11 (5.5)	2 (2.0)	9 (9.0)
Professional attire	Not present	36 (18.0)	16 (16.0)	20 (20.0)
	Briefly present	21 (10.5)	17 (17.0)	4 (4.0)
	Continuously present	143 (71.5)	67 (67.0)	76 (76.0)
Skill demonstration	Not present	107 (53.5)	31 (31.0)	76 (76.0)
	Simple actions	77 (38.5)	58 (58.0)	19 (19.0)
	Professional procedure demonstration	16 (8.0)	11 (11.0)	5 (5.0)
Demanding/intimate care tasks	Not present	126 (63.0)	72 (72.0)	54 (54.0)
	Briefly present	28 (14.0)	10 (10.0)	18 (18.0)
	Clearly presented	46 (23.0)	18 (18.0)	28 (28.0)
Stress expression	Not present	120 (60.0)	68 (68.0)	52 (52.0)
	Indirectly present	33 (16.5)	6 (6.0)	27 (27.0)
	Clearly present	47 (23.5)	26 (26.0)	21 (21.0)
Professional pride/meaning	Not present	128 (64.0)	65 (65.0)	63 (63.0)
	Indirectly present	32 (16.0)	9 (9.0)	23 (23.0)
	Clearly present	40 (20.0)	26 (26.0)	14 (14.0)
Response to prejudice	Not present	126 (63.0)	76 (76.0)	50 (50.0)
	Indirectly present	27 (13.5)	0 (0.0)	27 (27.0)
	Clearly present	47 (23.5)	24 (24.0)	23 (23.0)
Humor use	Not present	148 (74.0)	75 (75.0)	73 (73.0)

Variable	Category or statistic	Overall	Douyin	Xiaohongshu
	Present, not central	43 (21.5)	22 (22.0)	21 (21.0)
	Major strategy	9 (4.5)	3 (3.0)	6 (6.0)
Music use	Not present	61 (30.5)	48 (48.0)	13 (13.0)
	Present	139 (69.5)	52 (52.0)	87 (87.0)
Main scene	Institutional work/care area	99 (49.5)	32 (32.0)	67 (67.0)
	Institutional public area	64 (32.0)	46 (46.0)	18 (18.0)
	Staff rest area	20 (10.0)	11 (11.0)	9 (9.0)
	Commuting/outdoor	6 (3.0)	2 (2.0)	4 (4.0)
	Home/private space	1 (0.5)	0 (0.0)	1 (1.0)
	Talking-head/no clear scene	9 (4.5)	9 (9.0)	0 (0.0)
	Other	1 (0.5)	0 (0.0)	1 (1.0)
Comment characteristics (N = 2,892 recorded comments; Douyin n = 1,451, Xiaohongshu n = 1,441)				
Civility	Civil	2667 (92.2)	1448 (99.8)	1219 (84.6)
	Offensive	71 (2.5)	2 (0.1)	69 (4.8)
	Non-substantive	154 (5.3)	1 (0.1)	153 (10.6)
Emotional valence	Positive	1369 (47.3)	627 (43.2)	742 (51.5)
	Neutral	1078 (37.3)	570 (39.3)	508 (35.3)
	Negative	302 (10.4)	213 (14.7)	89 (6.2)
	Mixed	139 (4.8)	40 (2.8)	99 (6.9)
	Non-substantive	4 (0.1)	1 (0.1)	3 (0.2)
Topic frame	Supportive/empathic	1465 (50.7)	596 (41.1)	869 (60.3)
	Professional/informational	486 (16.8)	420 (28.9)	66 (4.6)
	Industry/system-related	753 (26.0)	344 (23.7)	409 (28.4)
	Skepticism	90 (3.1)	24 (1.7)	66 (4.6)
	Attacking/derogatory	55 (1.9)	25 (1.7)	30 (2.1)
	Non-substantive	42 (1.5)	42 (2.9)	0 (0.0)
	Missing	1 (0.0)	0 (0.0)	1 (0.1)

Note. Values are n (%) unless otherwise stated. Comment percentages use all recorded comments within each platform. Non-substantive denotes comments without an analyzable code for that dimension. The topic-frame and emotional-valence models

used 200 post-level count vectors based on 2,849 and 2,888 valid comment codes, respectively. Duration applies to video posts only.
IQR, interquartile range.

Table 3. Focal effects of skill demonstration and platform in post-level Dirichlet–multinomial models

Outcome	Predictor and contrast	Omnibus test: Wald χ^2 (df); p; BH q	Contrast 1 RRR (95% CI)	Contrast 2 RRR (95% CI)	Contrast 3 RRR (95% CI)
Topic frame	Skill: simple actions vs none	χ^2=25.46 (6); p<0.001; q=0.003	2.14 (1.33–3.44)	1.96 (1.30–2.95)	0.80 (0.41–1.55)
	Skill: professional procedure demonstration vs none	—	2.72 (1.28–5.79)	3.29 (1.67–6.48)	1.52 (0.52–4.45)
Topic frame	Platform: Xiaohongshu vs Douyin	χ^2=71.27 (3); p<0.001; q<0.001	0.17 (0.10–0.29)	1.73 (1.14–2.63)	2.12 (1.10–4.07)
Emotional valence	Skill: simple actions vs none	χ^2=19.44 (6); p=0.003; q=0.016	0.49 (0.33–0.72)	0.57 (0.32–0.99)	0.85 (0.39–1.82)
	Skill: professional procedure demonstration vs none	—	0.30 (0.15–0.59)	0.60 (0.25–1.45)	0.60 (0.16–2.34)
Emotional valence	Platform: Xiaohongshu vs Douyin	χ^2=17.31 (3); p<0.001; q=0.004	0.62 (0.41–0.93)	0.37 (0.21–0.66)	1.67 (0.76–3.67)

Note. RRR, relative risk ratio; CI, confidence interval; BH, Benjamini–Hochberg. N = 200 posts. Topic-frame contrasts 1–3 are professional/informational, industry/system, and skeptical/attacking versus supportive; emotional-valence contrasts are positive, negative, and mixed versus neutral. Models included all prespecified post features; complete estimates are provided in Additional file 1: Table S2. BH correction covered 18 omnibus tests. Contrast-level CIs were not multiplicity-adjusted and were interpreted only for predictors with omnibus tests meeting the FDR-adjusted threshold.

900 Table 4. Joint display integrating quantitative findings, four qualitative themes, and cross-cutting platform-related patterns

Integration domain	Quantitative finding	Qualitative finding and illustrative paraphrase	Integrated interpretation
Moral and relational recognition	Across no skill demonstration, simple actions, and professional procedure demonstration, the standardized probability of supportive comments was 57.1%, 42.7%, and 32.5%, respectively; the corresponding probability of positive comments was 52.5%, 38.4%, and 28.3%.	Moral and relational recognition (83/306, 27.1%) remained visible through respect for honest work, care ethics, and peer support. *Care work is honest work, and earning through one's own effort deserves respect* (C202, Xiaohongshu).	Posts showing care skills were associated with a smaller modeled share of general praise, while moral and relational recognition remained present within the broader occupational discussion.
Occupational navigation and professional boundaries	Professional/informational comments accounted for 13.4%, 20.5%, and 20.2% across the three skill levels, while neutral comments accounted for 31.6%, 46.3%, and 54.7%. Skill was associated with both topic frame (q = 0.003) and emotional valence (q = 0.016).	Occupational navigation and professional boundaries (71/306, 23.2%) comprised questions about credentials, recruitment, duties, and the distinction between nursing assistants and registered nurses. *Is a nursing-assistant certificate required for an internship in a care home?* (C238, Xiaohongshu).	Neutral comments frequently expressed active information seeking and clarification of occupational roles. Professional or informational discussion was prominent in both skill-demonstration categories.
Labor conditions and experience-based counter-narratives	The standardized probability of industry/system comments increased from 22.1% to 32.3% and 40.8%. Relative to no skill demonstration, the RRRs were 1.96 (95% CI 1.30–2.95) for simple actions and 3.29 (95% CI 1.67–6.48) for professional procedure demonstration.	Labor conditions and experience-based counter-narratives (90/306, 29.4%) concerned pay, shifts, staffing, workload, retention, and differences between the post and commenters' own workplaces. *I also work in a care home, but conditions at*	Visible care work provided a concrete basis for discussion of organizational conditions, including pay, workload, staffing, and retention.

Integration domain	Quantitative finding	Qualitative finding and illustrative paraphrase	Integrated interpretation
		my workplace are not like those shown here (C177, Douyin).	
Embodied, safety, and ethical scrutiny	Negative comments accounted for 11.3%, 9.6%, and 12.1%, and the combined skeptical/attacking category accounted for 7.4%, 4.5%, and 6.4%, across no skill demonstration, simple actions, and professional procedure demonstration, respectively.	Embodied, safety, and ethical scrutiny (36/306, 11.8%) focused on intimate bodily care, infection control, fall prevention, care quality, emotional strain, and responsibility. *Leaving the bed rail down at night could place the resident at risk* (C277, Xiaohongshu).	Visible care practices prompted appraisal of bodily demands, care safety, and ethical responsibility.
Cross-cutting platform-related and divergent findings	Compared with Douyin, Xiaohongshu comments were less likely to be professional/informational rather than supportive (RRR = 0.17, 95% CI = 0.10–0.29) and less likely to be negative rather than neutral (RRR = 0.37, 95% CI = 0.21–0.66). Platform was associated with both response domains (topic frame: $q < 0.001$; emotional valence: $q = 0.004$).	Within the purposively selected qualitative cases, Xiaohongshu discussions more often foregrounded bodily boundaries and care safety, whereas Douyin discussions more often used workplace experience to compare labor conditions. *Would leaving the bed rail down at night be safe?* (C277, Xiaohongshu) and *Conditions at my workplace are not like those shown here* (C177, Douyin).	The platforms differed in how commenters engaged with eldercare work rather than along a simple positive-negative divide.

Note. Adjusted probabilities are standardized across 200 post profiles and ordered as no skill demonstration, simple actions, and professional procedure demonstration. Qualitative percentages use 306 comments as the denominator; examples are de-identified

paraphrases. RRR, relative risk ratio; CI, confidence interval. Qualitative percentages describe the purposively selected sample of 24 posts and 306 comments and should not be interpreted as prevalence estimates for the wider comment corpus. Comment identifiers (C001–C306) are de-identified study codes assigned within the qualitative sample and do not correspond to usernames or account identifiers. Illustrative comments are paraphrased from the original Chinese.

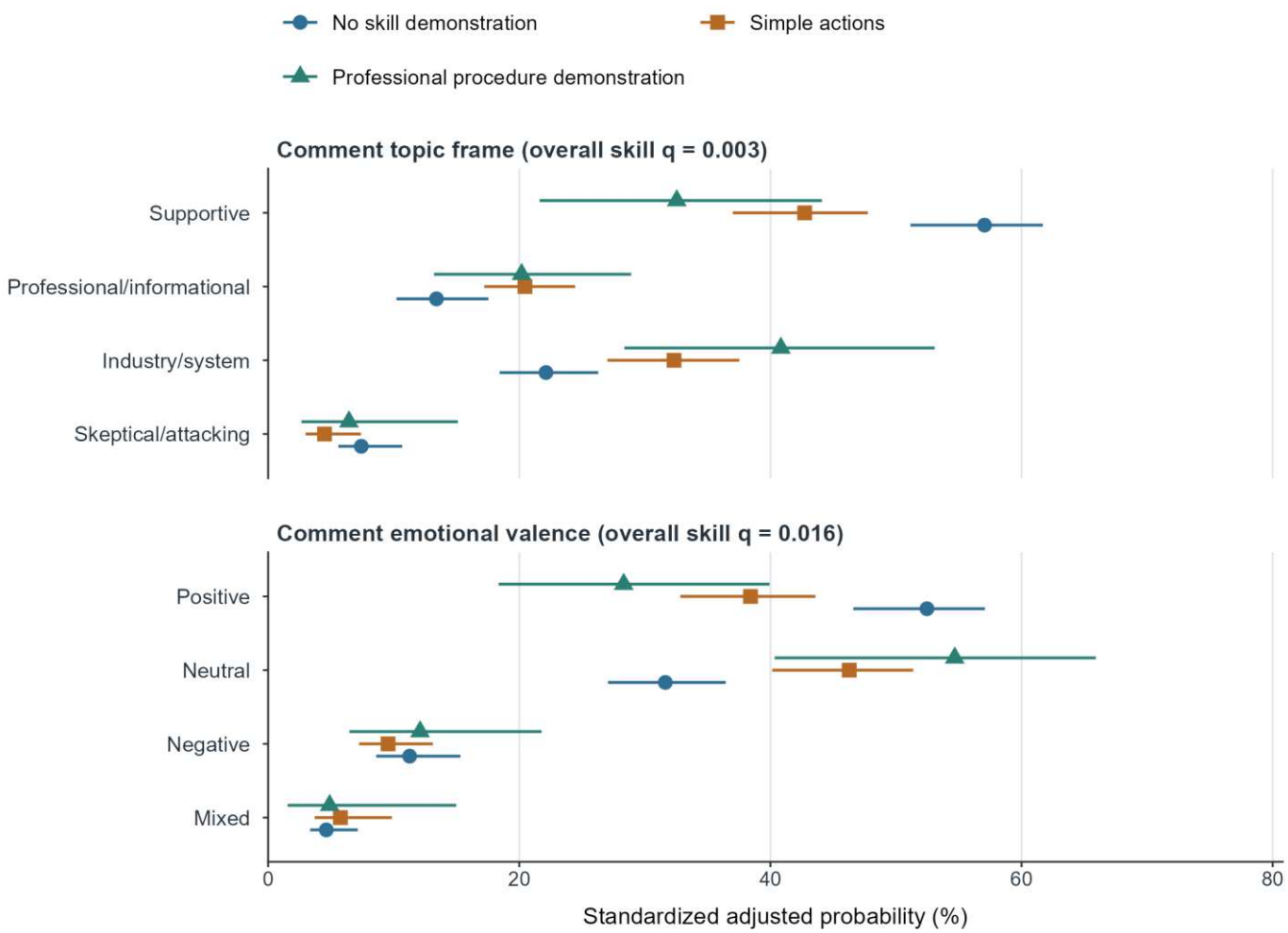


Figure 1. Standardized probabilities of comment responses by skill demonstration.

Note. Points represent standardized predicted probabilities weighted equally across the 200 posts; horizontal bars indicate 95% confidence intervals derived from 5,000 coefficient simulations. Topic frame: n = 2,849 comments; emotional valence: n = 2,888 comments. q values are Benjamini–Hochberg-adjusted omnibus Wald-test results for skill demonstration across the 18 predictor-by-domain tests.

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- Additionalfiles.docx