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Wood For Well-Being: Interior Architecture Perspectives And International Comparative Analysis

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Abstract

This study investigates Wood as a Medium of Well-being in interior architecture, emphasizing its role in enhancing human physical, psychological, and emotional health. While existing research mainly addresses engineering, material science, or environmental psychology, systematic studies within interior spaces remain limited. To fill this gap, the study examines wood not only as a structural or aesthetic material but also as a therapeutic design tool that enriches user experience. A qualitative approach was adopted, combining document analysis, visual documentation, and comparative analysis. Three international cases were analyzed: Oxford Maggie's Centre (UK), Sara Kulturhus (Sweden), and Vittra Telefonplan School (Sweden). Each was evaluated under four criteria—sensory experience, psychological effects, spatial organization, and sustainability—through content analysis and validated with a Case × Criterion Matrix and triangulation. Findings indicate that wood consistently supports well-being: reducing stress and creating therapeutic atmospheres in healthcare, fostering sustainability and spatial performance in cultural facilities, and encouraging safety, creativity, and belonging in educational spaces. Overall, the study demonstrates that wood is not just a building material but a strategic medium for designing healthy, sustainable, and human-centered interiors, contributing an interior architecture perspective to the Wood & Well-being discourse.

Keywords: Biophilic design, Interior architecture, Sustainability, Therapeutic design, Timber structures, Wood and well-being.

1. Introduction

In contemporary architecture and interior architecture, one of the increasingly significant issues is design approaches that prioritize the psychological and physical well-being of users. Traditionally evaluated through parameters of aesthetics, functionality, and cost, interior design is now assessed not only by the visual and functional quality of space but also by its responsibility to create "healthy and restorative environments" [1-2]. As emphasized in the literature on environmental psychology and biophilic design, the effects of buildings on human health extend beyond visual aesthetics and are associated with deeper psychological dimensions [3-4]. From the perspective of interior architecture, this shift necessitates a closer examination of how material choices contribute to users' sensory and psychological experiences within everyday spatial settings.

In this context, natural materials—particularly wood—have emerged as fundamental tools that transform user experience in interior environments. Historically utilized as a primary material in housing cultures, wood today is regarded not merely as a structural or aesthetic element, but also as a "therapeutic medium" contributing to users' mental and physical well-being [5-6]. The sensory qualities of wood—such as its scent, texture, color, and warmth—generate psychological effects including stress reduction, relaxation, and enhancement of a sense of belonging. Moreover, its direct association with biophilic design principles signals a new paradigm in interior design [7–10]. Rather than attributing these effects solely to the material itself, recent discussions suggest that wood gains therapeutic significance through its spatial articulation and interaction with light, scale, and interior organization. Accordingly, wood is directly related to biophilic principles. The biophilia hypothesis posits that humans possess an innate bond with nature, strengthened by the presence of natural elements in their living

environments [11]. In this regard, the use of wooden surfaces establishes a visual, tactile, and emotional bridge between users and nature, positively shaping spatial experience [6]. This relationship highlights the importance of considering wood not as an isolated component but as part of a broader environmental system within interior spaces. Experimental studies in office environments demonstrate that wood enhances concentration and increases job satisfaction [12]. Similarly, in schools and healthcare facilities, wooden interiors have been shown to support learning processes and accelerate recovery [1, 13]. While these studies confirm the positive role of wood, they often address its effects at a general environmental level, leaving room for further exploration at the scale of interior architectural design. These findings reveal that wood, across diverse functional contexts, serves not only as an aesthetic material but also as a multidimensional instrument supporting users' mental, emotional, and physical well-being. Consequently, such holistic contributions of wood have begun to be systematically conceptualized in international scholarship under the term "Wood & Well-being."

The concept of Wood & Well-being has evolved into an interdisciplinary framework, particularly through research conducted in Scandinavian countries, Japan, and Canada. Findings indicate that environments with wooden surfaces are associated with lower stress levels [5], stabilized heart rates [6], and strengthened spatial attachment [9]. More recent studies also highlight the positive effects of wood on attention, concentration, and productivity [14]. However, much of this body of research remains grounded in environmental psychology or material-oriented perspectives, with limited emphasis on spatial configuration and interior design strategies.

Another critical dimension of the conceptual framework relates to the sustainability contributions of wood. Compared to conventional construction materials such as concrete and steel, wood offers environmental advantages due to its carbon storage capacity [15]. Furthermore, its hygroscopic properties regulate indoor humidity, directly enhancing indoor air quality [16]. In this sense, wood provides a "dual benefit," combining ecological performance with human health contributions [17]. Studies conducted within the Turkish context indicate that wood possesses significant potential as a sustainable building material, both environmentally and culturally. Particularly in rural architecture and traditional housing typologies, wood is emphasized for its adaptability to local climatic conditions, its low carbon footprint, and its capacity to enable the effective use of local resources during the construction process [18–20]. In addition, the growing body of research in Türkiye focusing on sustainable architecture and local material use in recent years demonstrates that wood is being re-evaluated within contemporary interior design practices. These studies underline the relevance of wood not only as a traditional material but also as a viable component of contemporary sustainability- and well-being-oriented interior design approaches.

At this point, the research problem can be summarized as follows: while existing studies have predominantly examined the health and well-being contributions of wood within the domains of engineering, material science, and environmental psychology, there remains a lack of systematic and theoretically integrated investigations at the scale of interior architecture [17]. This gap indicates the need for research that bridges material-related findings with spatial and experiential dimensions specific to interior architecture. The aim of this article is to address this gap by comparatively evaluating the therapeutic, sensory, and sustainability dimensions of wood through international case studies, thereby offering both theoretical and practical contributions to the discipline of interior architecture.

2. Materials and Methods

The methodological framework was designed to integrate theory and practice in a balanced way. This approach not only facilitates the comparative evaluation of different building types but also allows the findings to be interpreted through the dimensions of architecture, psychology, and sustainability. The combined use of textual and visual data provides a holistic perspective for the study.

2.1. Research Design and Approach

This study was designed to examine the concept of "Wood as a Medium of Well-being" within the context of interior environments and to reveal the contributions of wood use to user well-being across different functional building types. The research is grounded in a qualitative research paradigm, as the aim is to achieve an in-depth understanding of spatial organization, user experience, and sensory-psychological effects rather than to collect measurable quantitative data [21-22].

Accordingly, the study was conducted using a multiple case study design [23], integrating literature review, document analysis, and visual analysis. The preference for a qualitative approach stems from the need to address the interdisciplinary dimensions of the concept—spanning architecture, interior architecture, environmental psychology, and biophilic design—in a holistic manner and to develop an interpretive framework for spatial experience. The research design adopts a theory-driven approach, whereby case studies are analyzed according to the criteria defined in the conceptual framework: sensory experience, psychological contribution, spatial organization, and sustainability.

Figure 1. Schematic representation of the qualitative multiple case study methodology.

Figure 1 illustrates the overall methodological structure of the study, outlining the sequential relationship between the theoretical framework, research design, data sources, case studies, and analytical criteria. The qualitative multiple case study approach is grounded in the "Wood & Well-being" framework and operationalized through document-based and visual analyses. In line with this structure, the following section details the data sources and document analysis procedures employed in the research.

2.2. Data Sources and Document Analysis

The primary dataset of this study was collected through document analysis, a method frequently employed in the social sciences. Document analysis provides the researcher with the opportunity to conduct a systematic evaluation based on previously produced information and visual materials [24-25]. The documents used in this research were grouped into four main categories: academic publications, grey literature, visual documents, and certification/technical reports. Within academic publications, peer-reviewed journal articles, theses, and book chapters were examined. Grey literature included project reports prepared by architects, competition files, award documents, museum and library catalogues, and media interviews. Visual documents encompassed project plans, sections, renderings, photographs, and presentation boards. In addition, international certification documents such as LEED, BREEAM, and DGNB, as well as carbon footprint reports, life cycle assessments (LCA), and indoor air quality (IAQ) measurement results, were incorporated into the analysis.

The data collection process was carried out in three stages. In the first stage, a comprehensive literature review covering the period between 2000 and 2025 was conducted using databases such as Scopus, Web of Science, Google Scholar, JSTOR, and TR Dizin, with keywords including wood interior, well-being, biophilic design, timber architecture, and therapeutic space. In the second stage, original reports, publications from architectural offices, and visual materials related to the selected case studies—Maggie's Centres, Sara Kulturhus, and Vittra Telefonplan School—were collected. In the third stage, all retrieved documents were classified by content and archived in separate files as academic texts, visual documents, and certification data.

Each document was rigorously evaluated in terms of reliability, currency, accuracy, and scope, and only sources that provided sufficient evidence were included in the analysis. In this way, both the scientific validity and methodological robustness of the research findings were ensured.

2.3. Case Selection and Rationale

In this study, three case studies were selected: Oxford Maggie's Centre (United Kingdom), Sara Kulturhus (Sweden), and Vittra Telefonplan School (Sweden). The selection process was based on a purposeful sampling approach and was grounded on several justifications. First, the chosen buildings exhibit functional diversity. This variety—covering healthcare (Oxford Maggie's Centre), culture and multifunctional public space (Sara Kulturhus), and education (Vittra Telefonplan School)—enabled the investigation of wood's contribution to well-being across different user groups and spatial scenarios. Another rationale was the dominant use of wood in interior spaces. A common characteristic of these cases is that wood was not merely employed as a structural material but was intentionally integrated as a defining element of spatial identity. At Oxford Maggie's Centre, wooden surfaces played a decisive role in creating a therapeutic atmosphere; in Sara Kulturhus, wood supported spatial organization within large-scale public areas; while at Vittra Telefonplan School, it enhanced the flexibility of learning environments and reinforced contributions to child psychology.

The contemporary context also informed the case selection. All three buildings were constructed in the post-2000 period and reflect principles of sustainability, biophilic design, and user-centered architecture. With these attributes, they represent highly significant examples of contemporary design approaches. Furthermore, the accessibility of plans, sections, visuals, reports, and academic evaluations for these projects ensured the availability of diverse data sources, thereby strengthening the scope of the document analysis.

From a theoretical representativeness perspective, the buildings were carefully chosen. Oxford Maggie's Centre exemplifies the therapeutic and psychological effects of wood in healthcare facilities; Sara Kulturhus illustrates wood's contribution to sustainability and spatial organization in public and cultural buildings; while Vittra Telefonplan School represents wood's impact on pedagogical processes, child psychology, and the sense of belonging in educational spaces. Collectively, these three cases allow for analytical generalization by bringing together different dimensions of the concept.

The specific rationale for selecting Oxford Maggie's Centre lies in the prominence of wood in its interior design, the extensive documentation of user experiences in both academic and professional literature, and its attainment of the BREEAM "Excellent" certification, which internationally validates its sustainability performance. These characteristics make the center a strong exemplar of the Wood as a Medium of Well-being concept across its four criteria and provide reliable data for comparative analysis.

2.4. Analysis Process and Criteria

In this study, the analysis process was structured around four main criteria derived from the concepts defined in the theoretical framework and supported by findings from the literature. These criteria were not adopted as isolated variables but were interpreted as interrelated dimensions shaping user experience within interior environments.

The first criterion, sensory experience, focuses on the effects of wood's sensory qualities—such as smell, texture, color, and warmth—on user perception. Research has demonstrated that wooden surfaces, in particular, create a sense of visual warmth, naturalness, and comfort [7–9]. In this study, sensory experience is approached not only as an immediate perceptual response but also as a foundational layer influencing users' emotional and psychological engagement with interior space.

The second criterion, psychological contribution, addresses the stress-reducing, calming, and belonging-enhancing effects of wooden interiors. Studies in [5] showed that wooden surfaces reduce cortisol levels, while [6, 17] emphasized that wooden environments stabilize heart rates and provide mental relaxation. Building upon these findings, the present study examines how such psychological effects are spatially mediated through interior design strategies rather than attributed solely to material presence.

The third criterion relates to spatial organization. Numerous studies have examined wood's role in shaping space, its interaction with natural light, and its contributions to biophilic design principles. Studies in [3] highlighted the role of wood in biophilic design, while [4] and [1] demonstrated the restorative impacts of natural elements on spatial organization. From an interior architecture perspective, this criterion enables the evaluation of how timber supports spatial continuity, legibility, and user movement within different functional contexts.

The fourth criterion, sustainability, concerns wood's carbon storage capacity, ecological performance, and contributions to indoor air quality. Research in [15] emphasized wood's low carbon footprint and carbon sequestration capacity, while [16] revealed its hygroscopic properties and role in regulating humidity and improving indoor air quality. Studies in the Turkish context have also highlighted the importance of wood as a sustainable material [10, 20]. Accordingly, sustainability is addressed not only as an environmental performance indicator but also as a factor directly linked to user comfort and long-term spatial health.

Using content analysis, data from the case studies were systematically coded according to these four criteria, and a case × criteria matrix was developed [26]. In addition, findings derived from visual documents were compared with textual data through triangulation, thereby enhancing the validity and reliability of the results. This analytical structure allowed the study to move beyond descriptive comparison and toward an interpretive evaluation of wood's multidimensional role in interior environments.

The methodological framework also considered the validity, reliability, and limitations of the study. To enhance validity, data diversity was ensured by integrating academic literature, visual documents, and certification reports, thereby strengthening internal consistency. Regarding reliability, categories were predefined during the coding process, and the analysis was conducted following a structured protocol to ensure replicability. Nevertheless, some limitations exist. The study did not employ primary data collection methods (e.g., surveys, interviews, psychophysiological measurements), and the findings are limited to secondary sources. Furthermore, restricting the analysis to three case studies prevents universal generalization; instead, the results should be evaluated at the level of analytical generalization.

3. Results and Discussion

The results of this study are presented in line with the methodological framework and the four analytical criteria defined earlier. The findings not only highlight the role of timber across different building functions but also reveal its consistent contributions to sensory perception, psychological well-being, spatial organization, and sustainability. In this section, the

selected case studies are examined in detail, followed by a comparative synthesis that situates the outcomes within the broader discourse on Wood and Well-being.

3.1. Comparative Analysis of Selected Case Studies

In this study, three international case studies were selected for comparative evaluation: Oxford Maggie's Centre (United Kingdom), Sara Kulturhus (Sweden), and Vittra Telefonplan School (Sweden). These cases were chosen not only because they represent different functional contexts—healthcare, cultural, and educational buildings—but also because they place wood at the center of their spatial design. The selection also offers a diversity of scale, ranging from a small-scale therapeutic environment to a large multi-storey cultural complex and an innovative educational facility. The comparative analysis was conducted through content analysis based on four main criteria derived from the literature: sensory experience, psychological contribution, spatial organization, and sustainability. These criteria made it possible to systematically evaluate how wood contributes to user well-being across different building types and cultural contexts. In the following subsections, each case study will be examined individually, followed by a cross-case synthesis.

3.1.1. Maggie's Centre (Oxford, UK)

The Maggie's Centres network originated in 1996 with the construction of the first center in Edinburgh, Scotland, designed by Richard Murphy Architects. This building aimed to provide psychosocial support for cancer patients and their families, embodying the concept of a "healing space outside the hospital" [27]. Following the first center, new facilities were designed by renowned architects such as Frank Gehry in Dundee, Rogers Stirk Harbour + Partners in London, Zaha Hadid in Kirkcaldy, and WilkinsonEyre in Oxford. This expansion quickly transformed Maggie's Centres into a widely recognized healthcare network, not only within the United Kingdom but also internationally.

Within the scope of this study, the focus is specifically on the Oxford Maggie's Centre (2014). The rationale for selecting this case can be explained under three main headings. First, the Oxford Maggie's Centre is one of the facilities in which wood is prominently used in the interior, playing a decisive role in the user experience. Second, the building holds a BREEAM "Excellent" certificate, thereby providing verifiable data with respect to sustainability criteria. Third, the Oxford Maggie's Centre offers both qualitative and quantitative data that are highly suitable for conducting comparative analysis in line with the four key criteria of the Wood as a Medium of Well-being framework (sensory experience, psychological contribution, spatial organization, and sustainability). Designed by WilkinsonEyre Architects, the Oxford Maggie's Centre was inaugurated in 2014 (Figure 2), where its modest scale and detached positioning visually reinforce the idea of a non-institutional, domestic-like healing environment [28].

Figure 2. Exterior view of the Oxford Maggie's Centre [29].

The building is located within the Churchill Hospital campus in Oxford but is detached from the hospital blocks, standing independently as a smaller-scale volume. This spatial strategy reflects the core principle of Maggie's Centres: to provide a homelike healing space outside the hospital. The plan scheme is single-storey, open, and permeable. From the entrance, users encounter a bright and spacious common area, supported by wooden seating zones, library corners, and consultation rooms (Figure 3). The plan configuration visually demonstrates how spatial openness and functional continuity are employed to reduce feelings of confinement typically associated with healthcare environments.

Figure 3. Ground floor plan of the Oxford Maggie's Centre [30].

Inside the building, wood is the dominant material, extending from flooring and ceiling beams to furniture, shelving, and storage systems. Preserved in its natural texture, the wood surfaces add warmth, intimacy, and a homelike character to the interior (Figure 4). The interior views highlight the continuous use of timber across multiple spatial elements, creating visual coherence and reinforcing sensory comfort through material consistency. These qualities align with Maggie's Centres' mission of creating an atmosphere of safety, comfort, and belonging for cancer patients and their families [6]. Moreover, the interplay between wooden surfaces and natural daylight reinforces the principles of biophilic design [3], as clearly observed in the way light enhances the tactile and visual qualities of timber surfaces.

Figure 4. Interior views of the Oxford Maggie's Centre [29].

From the perspective of Wood as a Medium of Well-being, the Oxford Maggie's Centre can be evaluated as follows: in terms of sensory experience, the tactile warmth, natural color, and scent of wood provide a calming atmosphere for users [8].

Regarding psychological contribution, consistent with the findings in [5] and [6], the presence of wood in this environment contributes to stress reduction and enhances the sense of belonging. Concerning spatial organization, the open plan, supported by wooden beams and columns, offers a flexible spatial configuration and defines circulation areas, thereby reinforcing spatial unity [1]. In the sustainability dimension, the building's BREEAM "Excellent" certificate demonstrates its environmental performance. The use of FSC-certified local timber enhances its carbon storage capacity, significantly reducing its carbon footprint compared to concrete and steel [15]. Furthermore, the hygroscopic properties of wood contribute to humidity regulation, thereby improving indoor air quality (IAQ) [16].

In this regard, the Oxford Maggie's Centre stands as a strong example of how wood contributes to sensory, psychological, spatial, and sustainability dimensions in user-centered healthcare architecture. With both its interior design scheme and sustainability certifications, it represents a tangible application of the Wood as a Medium of Well-being concept in the context of healthcare facilities.

3.1.2. Sara Kulturhus (Skellefteå, Sweden)

Sara Kulturhus, completed in 2021 in Skellefteå, northern Sweden, is a multifunctional cultural center and public building that combines a library, hotel, theater, exhibition areas, and conference halls (Figure 5). The exterior image highlights the vertical expression of timber architecture, visually communicating the building's role as an urban landmark while signaling sustainability through its materiality.

Designed by White Arkitekter, the 20-story building ranks among the tallest timber structures in the world. It was constructed using CLT (Cross-Laminated Timber) and glulam (glued laminated timber) elements sourced from the abundant local forests of northern Sweden [31]. In this respect, Sara Kulturhus is regarded as one of the landmark examples of contemporary timber architecture.

Figure 5. Exterior view of Sara Kulturhus [32].

The plan scheme is organized flexibly to accommodate multiple functions. The lower floors house the library and exhibition areas, the middle floors contain the theater and multipurpose halls, and the upper floors accommodate the hotel rooms (Figures 6 and 7). These floor plans illustrate how timber-based structural systems enable vertical functional layering while maintaining spatial continuity and legibility within a large-scale public building.

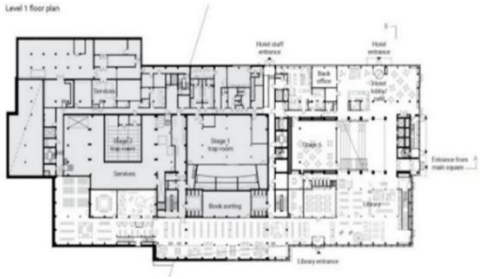

Figure 6. First floor plan of Sara Kulturhus [33].

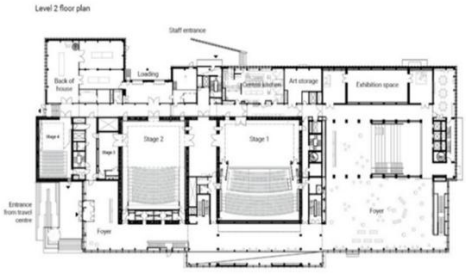

Figure 7. Second floor plan of Sara Kulturhus [33].

The exposed timber column-and-beam system defines the interior character (Figure 8). Large spans made possible by CLT panels create bright, transparent, and spacious public interiors. The interior views reveal how the visibility of timber structure contributes to both spatial orientation and sensory comfort, reinforcing a calm and inviting atmosphere within high-traffic public areas. The warmth of wooden surfaces establishes an inviting and calming atmosphere, in contrast to the dominance of concrete and steel in conventional public buildings [34].

Figure 8. Interior views of Sara Kulturhus [32].

From the perspective of Wood as a Medium of Well-being, Sara Kulturhus demonstrates significant contributions across the four analytical criteria. In terms of sensory experience, the texture, color, and warmth of the wooden surfaces strongly shape spatial perception; particularly in the library and hotel levels, timber furniture and wall claddings evoke a natural and homelike ambiance.

Regarding psychological contribution, the welcoming atmosphere created by timber fosters a sense of intimacy in public spaces and encourages users to participate more comfortably in cultural activities. Research indicates that timber buildings such as Sara Kulturhus strengthen social belonging and enhance users' positive emotional connections to the place [17].

Concerning spatial organization, the structural capacity of timber to span wide openings allows for flexible spatial configurations, supporting diverse cultural programming. The interplay of natural light with timber elements highlights the building's biophilic qualities and enhances user experience [3].

In the dimension of sustainability, Sara Kulturhus stands out with a construction process that minimizes carbon emissions and with internationally recognized certifications. The building holds a LEED Gold certificate and has been positioned as a carbon-neutral facility in life-cycle assessments (LCA) [31].

Additionally, the hygroscopic properties of timber contribute to indoor humidity regulation and improve indoor air quality [16]. Taken together, Sara Kulturhus represents a strong example of how wood functions not only as an aesthetic and structural material but also as a sensory, psychological, and ecological contributor in public and cultural buildings.

The fact that such a large-scale and sustainability-oriented project was realized in a relatively small city such as Skellefteå underscores the urban and societal dimensions of the Wood as a Medium of Well-being concept.

3.1.3. Vittra Telefonplan School (Stockholm, Sweden)

Vittra Telefonplan School, completed in 2011 in Stockholm, Sweden, is an innovative educational building (Figure 9). The exterior view reflects the school's non-institutional identity, visually distancing it from conventional school architecture and signaling an alternative, student-centered learning environment.

As part of the Swedish-based Free School (Vittra) network, the project stands out for translating modern pedagogical approaches into spatial design.

Designed by architect Rosan Bosch, the school abandons traditional classroom layouts in favor of open-plan learning areas, multifunctional zones, and flexible furniture solutions [35]. With this approach, Vittra Telefonplan is not merely a school building but an experimental learning environment that transforms modes of learning and social interaction [36].

Figure 9. Exterior view of Vittra Telefonplan School [37].

The spatial layout was designed to provide areas of different scales for individual learning, group work, and collective activities. The open-space concept replaces the conventional closed-classroom model, creating a flexible environment suited to diverse learning styles (Figure 10). The floor plan illustrates how spatial continuity and openness are used to encourage movement, interaction, and adaptability within the learning environment.

Figure 10. Floor plan of Vittra Telefonplan School [38].

Within these interiors, timber surfaces and furniture enhance the sense of warmth and naturalness, while also achieving acoustic and visual balance [35]. Most of the furniture consists of modular timber elements, enabling the space to be reconfigured quickly for different

activities (Figure 11). The interior views demonstrate how the consistent use of timber across floors, walls, and furniture supports sensory comfort, spatial cohesion, and a calming atmosphere conducive to learning.

Figure 11. Interior views of Vittra Telefonplan School [37].

From the perspective of Wood as a Medium of Well-being, Vittra Telefonplan School presents strong evidence across all four analytical criteria. In terms of sensory experience, the light-toned timber surfaces create a bright and spacious atmosphere, providing tactile warmth and making the space more inviting for students. Regarding psychological contribution, the calming atmosphere generated by timber fosters students' sense of belonging to the school, reduces stress levels, and helps them focus more effectively on learning [7, 39].

From the perspective of spatial organization, the flexibility of timber furniture combined with the open-plan layout creates a pedagogical "learning landscape" that supports diverse educational processes [40].

Students benefit from the spatial cohesion timber provides while experiencing different forms of learning, from individual study corners to group areas. In terms of sustainability, the school was built using timber materials sourced from local resources. The carbon storage capacity of wood reduces the ecological footprint of the building, while the hygroscopic properties of timber surfaces help regulate humidity and contribute positively to indoor air quality [16].

Vittra Telefonplan School thus demonstrates that timber is not only an aesthetic material in contemporary educational buildings but also a tool that actively supports pedagogical processes. Its flexible and biophilic spatial character, enhanced by wood, makes students' learning experiences more effective, peaceful, and creative.

In this respect, the building represents a concrete application of the Wood as a Medium of Well-being concept at the scale of education.

3.2. Cross-Case Analysis and Findings

The three international projects selected for this study—Oxford Maggie's Centre (United Kingdom), Sara Kulturhus (Sweden), and Vittra Telefonplan School (Sweden)—were evaluated through content analysis based on four main criteria: sensory experience, psychological contribution, spatial organization, and sustainability.

The scope of these criteria is defined as follows:

Sensory Experience: The contribution of timber surfaces' warmth, scent, and natural texture to users' perception of spaces as more intimate and secure [7].

Psychological Contribution: The role of timber interiors in reducing stress levels, enhancing a sense of calm, and strengthening spatial attachment [5].

Spatial Organization: Timber's contribution to spatial configuration, interaction with natural light, and the principles of biophilic design [3].

Sustainability: Timber's carbon storage capacity, life cycle performance, and its contribution to indoor air quality [15–16].

Oxford Maggie's Centre, designed on a small and human scale within the context of healthcare architecture, stands out for the role of timber surfaces in creating warmth, tranquility, and a sense of belonging. In therapeutic terms, timber helps reduce stress and fosters feelings of safety among users [6]. The open and permeable plan layout, integrated with natural light and wooden surfaces, reinforces biophilic design principles. The BREEAM "Excellent" certification and use of FSC-certified timber further strengthen the building's sustainability credentials. Sara Kulturhus, as a multifunctional cultural facility, represents a significant example of timber's large-scale structural capacity. CLT panels and glulam structures provide not only spatial integrity but also acoustic comfort and flexible use [34]. Combined with wide glazed openings, timber surfaces form a strong component of biophilic design. Additionally, the building has been internationally recognized for sustainability through life cycle assessments (LCA) aligned with carbon-neutral targets and its LEED Gold certification.

Vittra Telefonplan School highlights the pedagogical contributions of timber within an educational context. The use of timber furniture and surfaces in open and flexible learning environments creates an atmosphere that enhances children's sense of safety, belonging, and creativity [9]. The use of locally sourced timber and its hygroscopic properties contribute to humidity regulation and improved indoor air quality [16].

Based on these findings, a Case × Criterion Matrix was developed and is presented below. The validity of the matrix was ensured through literature-based criteria and triangulation of multiple data sources.

Table 1. Case × Criterion Matrix

Case /Criterion	Sensory Experience	Psychological Contribution	Spatial Organization	Sustainability
Oxford Maggie's Centre (UK)	Perception of warmth, natural texture, and spaciousness through timber surfaces; biophilic atmosphere	Stress reduction, enhanced sense of belonging and safety; therapeutic impact	Open-plan layout, integration of natural light with timber; biophilic spatial design	FSC-certified timber, BREEAM "Excellent" certification, humidity-regulating properties
Sara Kulturhus (SE)	Natural texture of CLT panels; spacious atmosphere through timber-glass integration	Sense of belonging and social cohesion in public spaces; user comfort and security	Large spans enabled by timber structure; acoustic comfort and spatial flexibility	Carbon-neutral targets, LEED Gold certification, life cycle assessments
Vittra Telefonplan School (SE)	Tactile warmth of timber furniture, bright tones creating spaciousness	Promotion of safety, belonging, and creativity among children	Open-plan layout, flexible learning environments; pedagogical spaces defined by timber	Locally sourced timber, contribution to indoor air quality (IAQ), low carbon footprint

This matrix was prepared in accordance with the logic of content analysis and triangulation. The three selected cases were evaluated using both qualitative data and verifiable evidence (certifications, reports, user experiences) across four key criteria. In the case of Oxford Maggie's Centre, timber stands out primarily for its therapeutic and psychological contributions, whereas in Sara Kulturhus the dimensions of sustainability and spatial organization are more prominent. Vittra Telefonplan School, on the other hand, differentiates itself as an educational environment that emphasizes timber's contribution to pedagogical processes.

In terms of common findings, all projects demonstrate that timber is regarded not only as a structural element but also as a psychological and sensory medium. Timber spaces contribute positively to user experience by reducing stress, fostering tranquility, and creating a sense of belonging; furthermore, the integration of natural light with timber surfaces emerges as a strong indicator of biophilic design. From the perspective of sustainability, all three projects highlight timber's carbon storage capacity and its contribution to indoor air quality.

Differences become evident in terms of function and scale. While timber in Oxford Maggie's Centre is primarily used to create a therapeutic atmosphere, in Sara Kulturhus it is sustainability and acoustic performance that are emphasized. In Vittra Telefonplan School, timber functions as an integral component of child-centered pedagogical design. Additionally, in terms of scale, Sara Kulturhus is a large, multi-storey building, while Maggie's Centre is small and human-scaled, leading to differentiated uses of timber. Overall, the results of the comparative analysis reveal that despite variations in scale and function -whether in healthcare, cultural, educational contexts- timber consistently delivers human -centered benefits. Through its sensory and psychological effects, timber transforms user experience while directly contributing to spatial organization and sustainability goals. At this point, the findings must be discussed within the theoretical framework to evaluate how therapeutic design approaches contribute to interior architecture, assess their relevance to existing literature, and identify the study's limitations. The next section will elaborate on these findings in light of theoretical approaches, addressing the therapeutic potential of timber in interior architecture, its contributions to scholarship, and the limitations of the research.

4. Discussion and Findings

This section discusses the findings of the study in relation to the established theoretical framework and the existing literature. The results derived from the comparative analysis of the selected case studies are interpreted to evaluate how the concept of Wood as a Medium of Well-being operates across different functional contexts within interior architecture. The discussion is structured around theoretical alignment, therapeutic contributions, limitations, and future research directions in order to provide a coherent and comprehensive interpretation of the findings.

4.1. Theoretical Alignment

The findings of this study indicate that the concept of Wood as a Medium of Well-being largely corresponds with the theoretical framework established in the existing literature and demonstrates multidimensional relevance at the scale of interior architecture. The psychological relaxation and sense of belonging observed in Oxford Maggie's Centre are consistent with studies [5] and [6],

which emphasize the stress-reducing effects of wood. In this context, wood emerges not merely as a spatial component but as a mediating element that strengthens the relationship between users and their environment. However, rather than acting as an isolated agent, wood operates within a broader environmental system in which its effects are reinforced through interaction with other natural elements, such as daylight, spatial openness, and biophilic design strategies. While these studies establish the psychological benefits of wood at an environmental level, the present research contributes by demonstrating how such effects are spatially articulated through interior design decisions and material continuity across different functional contexts.

The sustainability dimension highlighted in the case of Sara Kulturhus aligns with research focusing on wood's carbon storage capacity [15] and its contributions to indoor air quality [16]. Similarly, the pedagogical benefits identified in Vittra Telefonplan School are supported by studies [9] and [7], which underline the positive effects of wooden surfaces on children's psychology and learning processes. These findings suggest that while wood plays a central role in shaping well-being-oriented interior environments, its theoretical relevance is strengthened when considered as a primary material embedded within a multi-layered biophilic framework rather than as a stand-alone element. When considered collectively, these three cases demonstrate strong coherence between the concept's theoretical foundations and its practical applicability.

4.2. Therapeutic Contributions

The findings reveal that, within interior architecture, wood should be regarded not only as an aesthetic element but also as a therapeutic medium that directly contributes to users' physical and psychological well-being. In healthcare environments, wood supports healing processes through its stress-reducing and calming effects; in educational settings, it enhances feelings of safety, creativity, and belonging; and in cultural buildings, it strengthens social bonds by deepening users' engagement with space. At the same time, these therapeutic effects do not occur solely through the presence of wood itself but are often amplified through its interaction with complementary natural elements, including natural light, visual permeability, and spatial continuity.

Taken together, these findings suggest that the sensory, psychological, and spatial effects of wood constitute a multidimensional therapeutic potential. Accordingly, wood is best understood as a primary therapeutic medium within a broader biophilic system, rather than as a singular determinant of well-being outcomes. In this regard, the Wood & Well-being approach offers a comprehensive framework that integrates principles of biophilic design with sustainability strategies within the discipline of interior architecture.

4.3. Limitations

This study has several limitations. The findings are primarily based on secondary sources and visual documentation. The absence of primary data collection methods—such as user surveys, observations, or experimental measurements—necessitates that the results be interpreted within an explanatory and interpretive framework. Accordingly, user groups within the case studies are discussed at a general typological level (e.g., patients, students, visitors), and detailed demographic variables such as age, gender, or cultural background are not systematically differentiated. These factors may influence how sensory and psychological effects of timber interiors are perceived and experienced. Furthermore, the analysis is limited to three case studies, which restricts the potential for broad generalization.

4.4. Future Research

Future research incorporating experimental studies that measure users' physiological and psychological responses would strengthen the empirical foundations of the Wood & Well-being approach. In particular, user-based research methods—such as surveys, interviews, or observational studies—could explore how demographic variables, including age, gender, and cultural background, mediate sensory and psychological responses to wood in interior environments. In addition, comparative studies conducted across different geographical and cultural contexts could reveal variations in cultural perceptions of wood and the influence of local material use on user experience, thereby further enriching the literature.

5. Conclusion

This study has demonstrated that wood in interior spaces is not only a structural or aesthetic material but also a therapeutic medium that can contribute to users' physical, psychological, and emotional well-being. The comparative analysis of Oxford Maggie's Centre, Sara Kulturhus, and Vittra Telefonplan School revealed the multidimensional impacts of wood on human experience across different functions and scales. The findings indicate that wood may enhance enhances perceptions of intimacy and safety through its warmth, scent, and natural texture at the sensory level; can facilitate stress reduction, tranquility, and a sense of belonging at the psychological level; can enrich spatial experience through its integration with natural light and biophilic design principles at the spatial level; and may provide both environmental and human-centered benefits at the sustainability level through its carbon storage capacity, life-cycle performance, and contributions to indoor air quality. However, these effects should not be understood

as resulting from wood in isolation, but rather as emerging from its interaction with other spatial and environmental elements within a biophilic design context.

The results strongly align with the existing literature. The stress-reducing effects of wooden surfaces reported in [5] and [6] were directly observed in the case of Oxford Maggie's Centre. The carbon-neutral targets and certified wood use in Sara Kulturhus corroborate the findings in [15] and [16] on the low-carbon footprint of wood and its positive contribution to indoor air quality. In Vittra Telefonplan School, the role of wood in fostering children's safety, creativity, and sense of belonging confirms the findings of [9]. Taken together, these cases demonstrate that the concept of Wood as a Medium of Well-being is not only theoretically grounded but also validated through practice across diverse functional contexts. At the same time, the intensity and manifestation of these effects may vary depending on spatial configuration, user characteristics, and cultural background. Thus, this research establishes that wood in interior architecture is not merely an aesthetic choice but a context-dependent multidimensional medium of user experience, supported by empirical evidence in the literature.

The findings clearly demonstrate the potential therapeutic role of wood in interior architecture. Its stress-reducing qualities in healthcare facilities, its capacity to promote safety and creativity in educational environments, and its role in strengthening belonging and social bonds in cultural spaces collectively underscore its broad contributions across functions. Nevertheless, these therapeutic contributions should be interpreted as conditional rather than universally uniform, as they are shaped by spatial design decisions, environmental context, and user perception. In this respect, the Wood & Well-being approach has the capacity to form a new paradigm by integrating biophilic design principles with sustainability strategies within interior architecture. Beyond bringing nature indoors, wood can function as a central element in supporting healing, learning, and socialization processes when combined with complementary natural and spatial design strategies.

The most significant contribution of this study lies in systematically examining the concept of Wood & Well-being at the scale of interior architecture across three distinct functional contexts, whereas most existing research has focused on engineering, material science, or environmental psychology. By positioning wood not only as a material but also as a psychological and sensory medium, this study advances the discussion from a predominantly theoretical debate toward an adaptable and practice-oriented design approach. However, the study's limitations must also be acknowledged. The research relies largely on secondary sources and visual documentation; primary data on user experience (e.g., surveys, observations, biometric measurements) were not included. Accordingly, the findings should be interpreted within an explanatory and interpretive framework. Future studies incorporating physiological indicators (e.g., heart rate, cortisol levels), cross-cultural comparisons of wood perception, and evaluations of wood alongside other natural materials (such as bamboo, stone, or clay) would provide a more solid empirical foundation. Moreover, user research conducted in residential and office environments, in addition to healthcare, educational, and cultural buildings, would be essential for identifying the contributions of wood across different spatial typologies.

In conclusion, this study demonstrates the sensory, psychological, spatial, and sustainability-related contributions of wood in interior environments and proposes the Wood & Well-being approach as a strong theoretical and practical framework for the discipline of interior architecture. Rather than presenting wood as a universally deterministic factor, this framework emphasizes its role as a primary yet context-sensitive medium whose effects are shaped by cultural, spatial, and individual variables. Through the synthesis of the study's multidimensional findings, this framework offers guidance for future interior design practices while also opening new avenues for academic research focused on human-centered and sustainable design. Developing this framework will significantly enrich the academic literature while informing future human-centered and sustainable design practices.

Author's Contributions

Gizem Büke Öztürk: Designed the study, analyzed the findings, and prepared the manuscript.

Ethics

There is no ethical issues after the publication of this manuscript.

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